Of Awards in Companies

An Econometric Assessment of Honor and Recognition as Incentives

Dissertation

for the Faculty of Economics, Business Administration and Information Technology of the University of Zurich

to achieve the title of
Doctor of Economics
presented by

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from
Wuerzburg

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The Faculty of Economics, Business Administration, and Information Technology of the University of Zurich hereby authorises the printing of this Doctoral Thesis, without thereby giving any opinion on the views contained in them.

Zurich, October 21, 2009
The Dean: Prof. Dr. Dr. Josef Falkinger

Preface

The thesis is based on my research at the Institute for Empirical Research in Economics at the University of Zurich. First and foremost, I want to thank my academic mentor Prof. Dr. Dr. h.c. mult. Bruno S. Frey. He supported, challenged and inspired me to analyze the world from an economic perspective while always being open to the limits of economic theory and to insights from other social sciences. The ideas presented in this thesis, which were developed in many discussions, represent this broad understanding of economics. His spirit of research, creativity and generosity are truly extraordinary. Many conversations with PD Dr. Matthias Benz, Prof. Dr. Alois Stutzer, Dr. Simon Lüchinger, Christine Benesch, and Reto Cueni have influenced my thinking and the content of this thesis. I am particularly grateful to Christine Benesch, Reto Cueni, and Charles Efferson for the care with which they read earlier drafts of this work and to Isabel Ellenberger for her secretarial support, which freed our minds from many administrative issues. I also wish to thank Prof. Dr. Dr. h.c. mult. Ernst Fehr who read my thesis as a co-referee.

The empirical applications in chapters 4, 5, and 6 are based on collaborative projects with Reto Cueni, Bruno S. Frey and Michael Kosfeld. To highlight their contribution I use the first-person "we" throughout the relevant chapters. I remain, of course, solely responsible for the content, including

any errors, in this thesis.

I am indebted to numerous persons who provided me with the data for the empirical research, but particularly to Hans Hofmann, Alice Arnold, and Nadia Schweizer. Many thanks also to Claudia Bernasconi, Reto Cueni, and Thomas Eugster for assisting me in the data collection.

Special thanks go to my friends and in particular to Charles Efferson for encouraging me to believe in myself and my academic projects. He read parts of the manuscript and was never too tired to listen to the preliminary ideas, results and setbacks associated with my research. I also owe a debt of gratitude to Christine Benesch for more than four years of collaboration, support and exchange concerning scientific, administrative, and personal issues. Finally, I want to thank my parents Werner and Hedwig Neckermann to whom this work is dedicated and who have constantly supported me in every manner possible.

An award goes to all of you; you deserve it!

Even if you think you don't, in the words of the comedian Jack Benny "I don't deserve this award, but I have arthritis and I don't deserve that either."

Zürich, March 2009

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Chapter 1

Literature

"Honour is the greatest good among external goods."

Aquinas, 1265 / 1958, Index 156

"The most important factor is individual recognition — more important than salaries, bonuses or promotions."

Paul M. Cook, Founder and CEO of Raychem
(Nelson, 1996)

- Irregular accounting procedures resulted in the bankruptcy of Enron, a large U.S. energy company.
- Société Générale, one of France's most important commercial banks, incurred a loss of a €4.9 billion ($ 6.4 trillion) due to the unauthorized trading decisions of an employee.
- In 2002 WorldCom filed for bankruptcy after years of fraudulent accounting methods by key staff members were uncovered.

- Barings Bank, the oldest merchant bank in London, collapsed in 1995 after one of the bank's employees, Nick Leeson, lost £827 million ($1.2 billion) speculating—primarily on futures contracts.

Is there a common theme in all these scandals? These employees all had high-powered financial incentives to do well, and yet acted contrary to the interest of their principals. The importance of getting work incentives right has long been recognized in the economics and management literature. Both scholars and practitioners recognize that for today's organizations to attain a competitive advantage, a skilled work force, cutting edge technological proficiency, exemplary customer service, and high quality products and services are needed (O'Reilly and Pfeffer, 2000). Because these demands require high employee motivation, the critical factor in gaining a distinctive edge in a globalized, competitive market seems to be on the human side of organizations (Argyris, 1993; Pfeffer, 1995, 1998; Stajkovic and Luthans, 2003). Further, research is demonstrating that employees drive success, whether that be defined as productivity, customer satisfaction, or even profits (Harter et al., 2002). Therefore, new approaches to human resources are essential for improving competitiveness (Ichniowski and Shaw, 2003), especially as the evidence on the effect of monetary incentives on employee motivation and organizational performance is mixed (the ineffectiveness of monetary incentives is, for example, shown in Perrin, 2007; Rost and Osterloh, 2009). On the margin, it is not clear how much CEOs and other workers respond to within-company incentives.

Despite the agreement about the importance of having a motivated workforce, a large part of this potential currently lies idle. A study of The Conference Board (Franco, 2003) shows that two-thirds of employees do not identify

with the business goals of their employer and are not motivated to contribute to their attainment. More than half of the employees perceive a disconnect between themselves and their employer, and one-fourth are willing to contribute just enough to not lose their job. A study by Perrin (2007), one of the leading management consultancies, shows that the picture is similar in European countries. In Germany, for example, the percentage of highly motivated employees is 17 percent (12 percentage points lower than the respective number in the US). Almost every tenth employee has lost all motivation and 28 percent are poorly motivated to perform well.

A number of employee surveys highlights what employees consider to be important for their work motivation. These studies, therefore, provide insights into what motivating measures are currently underexploited given the low percentage of highly motivated employees. For Germany, Perrin (2007) suggests that the most important motivational drive for employees is that managers show interest for their workforce. Next in line is the decision-making autonomy, followed by the reputation of the company and opportunities for training and career development. A review of employee surveys reveals that "full appreciation for work done" is the only job reward factor that consistently ranks among the top two motivators for U.S. workers throughout the post-World War II period (Wiley, 1997). Among ten factors, interesting work was considered somewhat more important in the 80s, and good wages were at the top of the list in the 90s, but neither interesting work nor good wages were among the top four reward factors in more than one decade out of three. Financial motives occupy fourth place. Likewise, Elsdon (2002) reports that lack of recognition or appreciation is a major reason why people leave organizations, second only to lack of career development opportunities.

The importance of recognition for work motivation and job satisfaction has already been identified in earlier studies such as Dahrendorf (1959, p. 83) and Dunnette et al. (1967). Practitioner surveys show that the majority of managers believe that providing nonfinancial recognition to employees when they do good work helps to increase their performance (Nelson, 2001).
Despite the agreement that recognition is important, its motivating power is rarely exploited in companies. Wiley (1997), for example, concludes that "praise for a job well done is probably the most powerful, yet least costly and most underused, motivation tool." The disconnect between the agreement on the important role of recognition and its underemployment as a human resources instrument is attributed to a lack of empirical support for strategies to motivate employees to improve performance (see also Pfeffer, 1995, 1998; Ambrose and Kulik, 1999; Luthans and Stajkovic, 1999; Pfeffer, 2001).

This thesis addresses the identified research gaps in two ways. First, it provides clear empirical evidence on the impact of rewards on work performance. Second, it does so for a type of reward that has not been explicitly dealt with in the economics literature so far, namely for institutionalized recognition in the form of corporate employee awards. Awards directly address recognition and praise — those motivational drives that have been identified as important but so far remain underexploited. In contrast to informal praise and feedback, which are typically outside the realm of what the company can strategically influence and plan, awards can be incorporated into a company's official human resources strategy.

Despite their neglect in the scientific literature, awards are widely used in the corporate sector.[1] In his book *1001 Ways to Reward Employees*, Nel-

[1] The prevalence of awards is also noted for other sectors like the cultural sector. English

son (2005) provides ample evidence for the number and variety of awards in companies ranging from *Employee of the Month* titles to *Bravo* and *Thanks* awards.[2] To mention just a few examples of corporate awards, consider Federal Express, which confers a host of awards, both for individual and team efforts. These include the *Circle of Excellence Award* that is presented monthly to the best-performing FedEx station, and the *Golden Falcon* that is awarded to employees who go beyond the call of duty to serve their customers. Recipients of the *Golden Falcon* receive a golden uniform pin, a congratulatory phone call from a senior executive and ten shares of stock. Awards also play a substantial role in high technology firms. The research laboratories of IBM, for example, have a multitude of awards for technical achievements (such as the *Outstanding Technical Achievement Award*), as well as for other exceptional efforts (such as the *Knowledge Advantage Award* or the *One Team Award*).

There is major discrepancy between the practitioner literature and the academic literature with respect to recognition programs. On one hand, the practitioner literature frequently advocates recognition programs to improve safety (Pardy, 1999; Krause, 1998; Tait and Walker, 2000), reduce turnover (Bursch, 1999; Davidson, 1999; Wallsten, 1998), increase job satisfaction (Davidson, 1999; Wallsten, 1998), improve performance and productivity (Schneier, 1989), and reduce absenteeism (Boyle, 1995). Furthermore, nu-

(2004, p. 17) takes it to the extreme, stating "the cultural universe has become supersaturated with prizes."

[2] Nelson and Spitzer (2003) lists the various awards offered in big international companies such as IKEA, McDonald's or SONY. Awards are also widely used in small and mid-sized companies. Examples are provided in the *Strategic HR Review* that regularly devotes an entire section to successful company award programs (examples are Addison, 2005; Keating, 2007).

merous books and manuals have been written detailing how to structure recognition programs (Townsend and Gebhardt, 1997; Glassock and Gram, 1999; Ventrice, 2003; Podmoroff, 2005). There is also a number of studies on public sector awards to improve service quality (Löffler, 2001; Hartley and Downe, 2007; Bourgault and Gusella, 2001). On the other hand, there is a paucity of academic research targeted at recognition programs. This disparity is probably driven by a lack of a clear definition about what constitutes a corporate award system from an academic point of view. When practitioners discuss recognition programs, they refer to a variety of interventions that represent incentive instruments designed to reward at a low cost. From an academic point of view, this represents an ambiguous concept with little theoretical basis, which is why academic research has focused on studying money, praise and feedback in isolation.

So what exactly are awards? Awards are understood as extrinsic, predominantly non-material incentives allocated through an institutionalized recognition program. The formal character clearly distinguishes awards from spontaneous feedback and praise. They derive their motivating power from providing a combination of feedback, status and recognition and — mostly small — material incentives. Further, they contribute to the work environment by influencing organizational norms and by highlighting role models of exemplary performance.

Awards work as incentives via a number of channels that have been shown to influence human behavior (a more exhaustive and detailed account of the various motivational channels is presented in chapter 2). Among others, awards motivate (1) because of the social prestige they generate and recognition they bring within the peer group and from the principal; (2) because

winning an award makes the recipient feel good about herself even without others knowing about the award; (3) because awards have signaling value in that they can signal unobservable characteristics like motivation and commitment to parties inside and outside the company; (4) because of the monetary compensation associated with winning the awards.

Awards have work both as ex ante incentives and through ex post motivational effects. Awards establish role models and create loyalty between the recipients and the award giver. Further, award announcements as well as the publication of the behavior of award winners distribute information on the kinds of behaviors and performance that the company expects and values in its employees. Depending on the specific award analyzed, the various award channels mentioned above are salient in differing degrees. While the general term 'award' implies that the different existing honors and prizes pertain to the same group of incentives, specific awards differ vastly from one another in terms of what component is most salient. Some awards are clearly competition prizes, while others more closely resemble feedback or praise. Some awards are valuable in monetary terms, while others come with neither monetary nor other material benefits.

This thesis refrains from distinguishing between different types of awards and treats all types of awards as a unified category of non-monetary incentives. This is justified, despite the mentioned differences, as all awards share certain essential features that warrant the analysis of awards as one phenomenon. Among others, these features are that awards are always visible, be it via a public ceremony or because the award itself can be publicly displayed. Further, awards are associated with some form of social recognition, which can come either from peers or from the award-giving institution. Awards are

handed out according to a set of broad and vague criteria. Typically, the various performance dimensions and how these are weighed to determine the winner are not clearly specified. Consider, for example, an award for exceptional customer service. It is typically not made explicit which specific behaviors (e.g., working overtime, being friendly, solving customer complaints) count towards winning the award and how much weight each of the relevant behaviors receives when the management decides on the award winner. One reason for vague award criteria may be that they prevent employees from focusing on the activities specified as relevant for winning the award instead of considering which behavior would be best in the situation at hand. Vague criteria also allow the management to adjust the set of relevant performance dimensions and weights to the actual business situations. This leads to another feature of awards, namely the subjective element in determining the winner. While awards are typically handed out in a manner that makes the reasons for choosing the particular recipient(s) transparent, nonrecipients cannot claim an award by trying to establish that their performance was better. A further characteristic of awards is the tournament character and the fact that all awards serve as incentives, be it direct or indirect. Awards are direct incentives when it is announced ex ante that they will be granted for certain kinds of performance, such as the customer service award granted for the best customer service in the current year. Awards are indirect incentives when they stimulate non-winners to engage in tasks similar to the ones rewarded, by establishing that this kind of behavior is deemed desirable, and when they foster motivation by improving the work environment or by changing norms. In addition, awards may strengthen organizational commitment, which in turn provides incentives to work better and harder (the unique features of awards are further explored in Chapter 3).

As was mentioned above, there exists little academic research on awards. Hansen and Weisbrod (1972) and Frey (2005, 2006, 2007) provide general accounts of awards. Concerning the corporate sector, Markham et al. (2002) show in a quasi-experimental setting that the introduction of a public recognition program lowered absenteeism by 52 percent. Gavrila et al. (2005) describe the optimal solution for the management of awards over time, by considering that their incentive effect depends on the number of awards presented. Besley and Ghatak (2008) analyze a principal-agent setting with non-monetary incentives, such as job titles or awards. The decisive feature of these rewards is that they have zero costs, so that it is incentive compatible for the principal to award them even if his output is not verifiable for the agent. In such a situation, the principal cannot credibly commit ex ante to paying out an output-dependent material reward, because he would always claim ex post that final output is low. Malmendier and Tate (2008) also show how the receipt of a title like *CEO of the Year* affects subsequent performance. However, their paper is concerned with extra-organizational awards that are exogenous to the principal-agent relationship. These kinds of awards differ in essential ways from intra-organizational awards because they are handed out for a different set of reasons, by a person or institution that is not the principal, and come with a different set of benefits for the recipient. Therefore, their findings cannot be generalized to intra-organizational awards.

There are further economic discussions of awards. These, however, do not address the behavioral effect of awards but rather use specific prizes to study other issues like the correctness of expert opinion (e.g., Glejser and Heyndels, 2001; Ginsburgh, 2003; Ginsburgh and van Ours, 2003 on music and arts prizes, Coupé, 2003 on best paper prizes in economics, and Hamer-

mesh and Schmidt, 2003 on the determinants of *Econometric Society Fellows* elections). Redelmeier and Singh (2001) use Oscars and Rablen and Oswald (2008) use *Nobel prizes* to study the impact of status on physiological outcomes such as health and longevity. Nelson et al. (2001) estimate the economic impact of winning an *Oscar* on business performance. Many historical accounts describe prizes and support the intuition that they are important motivators, but lack a systematic theoretical or empirical account of their role Examples are Holden (1993) and Levy (1987) on the *Academy Awards*, Risk (1972) on the *Order of the Bath* or Galloway (2002) on the *Order of St Michael and St George*.

This thesis provides an extensive discussion of awards and demonstrates their effect on employee performance. Chapter 2 lays the theoretical foundation for why awards may motivate by providing an over-view of classical economic as well as more recent behavioral and psychological arguments. When awards have some material value they can be understood as performance incentives in a principal-agent setting or as a prize in a tournament. Moreover, agents may exert extra effort to receive the award when the award signals to relevant outsiders that the agent is highly motivated, talented, or successful in the company. Further, the announcement of the criteria for a new award or the publication of an award winner's activities can provide other employees with information on the kinds of behavior and performance the company expects and values in its employees. Chapter 3 discusses awards and their relationship with other incentive instruments, specifically monetary compensation schemes, and presents some insights into practitioners' perceptions of awards as incentives. To gain a deeper understanding of the characteristics of awards as incentives, they are compared in their extreme form of purely social

recognition without any material consequence with pure monetary compensation devoid of any social component. Chapters 4 to 6 provide the empirical evidence showing that awards have a systematic and significant effect on employee performance. A field experiment in collaboration with an international NGO is presented in chapter 4. It shows that productivity in a data entry job, measured as the number of completed data fields per minute, is approximately 10 percent higher in workgroups where the two best employees can get an award in addition to the fixed wage that is identical for all workgroups. Awards also have a significant impact on performance after they are handed out. Chapter 5 reports the results of an econometric study using data on awards and employee performance from the call center of a large international bank. It can be shown that the performance of award winners is significantly higher than that of nonrecipients one month after an award. Chapter 6 sheds some light into what award features drive this effect by reporting the results of a vignette study with researchers at a research laboratory. The findings suggest that the publicity associated with winning an award is a major motivation force that drives people to aspire to win an award. Chapter 7 concludes by critically examining the results and limitations of the studies presented, discussing the implications for human resources and suggesting avenues for further research.

Chapter 2

Why Do Awards Affect Behavior? — A Survey of the Literature

This chapter lays the theoretical foundation for the subsequent empirical sections, which demonstrate the impact of awards on employee performance in organizations. The literature in economics, organizational psychology, management, sociology and evolutionary anthropology is presented regarding if and why awards may induce effort. As there is no literature that directly addresses awards, those aspects of the literature are chosen for discussion that are relevant for an analysis of awards. First, standard economic approaches are presented that explain why awards induce effort. Awards are discussed in terms of the tournament created, their value as signals of unobservable personal characteristics as well as their function in communicating desirable and successful behaviors within the organization. The chapter proceeds with approaches that discuss awards in terms of preferences beyond material self-interest such as status, self-esteem, and image considerations. The concluding section briefly discusses culture, business environment and procedures as factors that influence the effectiveness of awards.

The same subject is often discussed with a different terminology in different disciplines. For the most part, the language has been adapted to fit into the framework typically used in economics. One exception is the psycho-

logical concept *work motivation* that is treated as an outcome variable per se in psychology, whereas economists are typically only interested in its behavioral consequences. Motivation, coming from the Latin word *movere* meaning 'to move', has been defined in various ways. Pinder (1998) describes work motivation as the set of internal and external forces that initiate work-related behavior, and determine its form, direction, intensity, and duration. This definition views motivation, i.e. the drive to act, as being influenced by environmental forces, such as the organizational reward system and the nature of the work being performed, as well as forces inherent in the person, such as individual needs and motives. In comparison, economics has focused on the effects of the organizational reward system by making the simplifying assumption that all internal forces can be summarized as the desire for material gain. More recent contributions in economics acknowledge the role of other needs and motives in the workplace like the desire for status, prestige and intrinsic motivation. As there is a direct relationship between motivation and behavior, the determinants of motivation identified by psychologists can be discussed alongside the behavioral forces identified to drive behavior in economics.

2.1 Standard Approaches

In this section, I outline how several standard theories - a principal-agent model, a tournament, a signaling framework and an information-sharing framework are relevant to awards. If awards are tied to some immediate or future monetary or material advantage, much of the economic standard literature on principal-agent relationships and tournaments can be applied directly to the case of awards. The same holds when one assumes that employees value

awards per se. Mechanisms for why this may be the case are explored below in section 2.2. Tournaments can be viewed as one mechanism to induce effort in a principal-agent setting. Because the tournament literature is so large and has established itself as a field of inquiry, it is dealt with in a separate section. The general framework of principal-agent theory and the tournament literature share a focus on the incentive effect of rewards, i.e. their impact on performance while employees work towards receiving them. The same holds for the signaling literature. The signaling framework can explain why employees aspire to win awards when awards have some value as signals. Awards can, for example, signal motivation and ability to outsiders, which may lead to attractive job offers or improve the agent's social network. Further, awards affect behavior when they reveal information on the kinds of activities and the level of performance the company wants from its employees. Such information is relevant in settings with complex tasks where this information is not readily available otherwise and if employees expect that performance in line with company goals results in pay raises or promotions. As a conceptual note, the theories described here do not have the same relationship to awards as one another. Rather, they help to explain and highlight different aspects of awards. Principal-agent and signaling models refer to the problem of unobservability of agent's effort and describe ways to get around it. Tournaments are similar to awards in their structure as some good is rationed and it is assumed that participation in a tournament raises the equilibrium effort of all players and not just the winners. However, there is no "problem" per se. The information value of awards refers to a lack of clarity about norms between the principal and agent. Hence it is an issue within the principal-agent problem about the unobservability of the principal's goals.

2.1.1 Principal-agent theory

Principal-agent theory goes back to Alchian and Demsetz (1972) and Jensen and Meckling (1976) and is the generic framework within which economic theory typically discusses incentive provision in the workplace. The central dilemma investigated by principal-agent theorists is a two-party interaction in which one party, the principal, wants to induce another party, the agent, to take some action that is costly to the agent. The principal may be unable to directly observe the action of the agent, but instead observes some output, X, that is determined, at least in part, by the actions of the agent. The principal's problem is to design an incentive payment from the principal to the agent that induces the agent to take the best action from the viewpoint of the principal. The simplest example of a principal-agent problem is that of a manager and a worker. The manager wants the worker to exert as much effort as possible in order to produce as much output as possible, while the worker rationally wants to make a choice that maximizes his own utility given the effort and incentive payment scheme (further information on the basic set-up is provided in Varian, 1992).[1]

The basic premises of the theory are that the relationship between the principal and the agent is defined solely by the contract and that the agents react to the stimuli the employer presents them with. Further, better performance requires greater effort or is in some other way associated with disutility on

[1] The basic premises of this theory go back to Taylor (1911), according to whom the natural state of a worker in an organization is one of inactivity and laziness and only the prospect of personal financial gain can coax the individual out of this. Taylor assumes that whenever people are forced to work in groups or for fixed pay, they will be undermotivated and reluctant to exert effort. His suggested solution is to only select the very best workers, to ensure that they are treated and work as individuals and to pay them only for what they produce.

the part of workers. In order to provide incentives, these models predict the existence of reward systems that structure compensation so that a worker's expected utility increases with observed productivity. An optimal incentive scheme in settings of incomplete or asymmetric information changes the rules of the game such that the self-interested rational choices of the agent coincide with what the principal desires. Mechanisms that have been discussed in the literature are piece rates and commissions, profit sharing, efficiency wages, and performance control.[2]

In psychology, the Organizational Behavior Modification paradigm (Luthans and Kreitner, 1975, 1985) also emphasizes that employee behavior is a function of contingent consequences (Bandura, 1969; Komaki, 1996; Pfeffer, 1995). The paradigm is grounded in reinforcement theory, where the core idea is that decisions concerning present or future behaviors are largely influenced by the consequences, i.e. rewards, of past behavior (see Steers et al., 2004 and the references therein). Past actions that led to positive outcomes tend to be repeated, whereas past actions that led to negative outcomes tend to diminish [3] Current reinforcement models are prevalent in organizational psychology as explanations for understanding work motivation and job performance (Komaki, 2003). The most commonly studied organizational reinforcers in this literature are money in the form of performance pay, feedback, social recognition, and their combinations (Stajkovic and Luthans, 1997, 2001, 2003).

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[2] The goal of pay-for-performance is to compensate staff according to their individual and specific performance in order to motivate them to further efforts. The concept follows the idea of piece rate. The company *Safelite Glass* is a prominent example. After the change from fixed pay rates per hour to piece rates, measured according to assembled glass units per worker and day, productivity rose by 36 percent while salary cost only rose by 9 percent (Lazear, 2000b).

[3] Thorndike (1911) referred to this as the law of effect.

Principal-agent and reinforcement theory are well supported empirically. However, there remain a number of puzzles that these theories cannot explain, such as the fact that most pay systems are largely independent of performance, i.e. egalitarian and seniority based. Moreover, the empirical findings on the effect of pay-based incentives are mixed (see Pfeffer, 1997, pp. 111f, Kohn, 1993 and Frey, 1997). Within the principal-agent and organizational behavior frameworks, awards can be understood as one form of a performance-contingent reward similar to piece rates or profit sharing and as one possible combination of the recognition, feedback and money.

2.1.2 Tournaments

Awards can also be understood as prizes in a tournament. The analysis of tournaments has been introduced in the economic literature by Lazear and Rosen (1981).[4] According to McLaughlin (1988), tournaments can elicit effort when the monitoring of input is costly by offering a "carrot" to the winner or a "stick" to the loser. The principal features of tournaments apply to any compensation scheme which bases pay on a relative performance, as is typically the case for awards if the number of potential winners is limited. Relevant for designing awards are analyses of how specific design feature of the contest influence effort provision. Clark and Riis (1998), for example, analyze the optimal number of prize winners and whether a simultaneous or sequential distribution mechanism is preferable given that agents may be heterogeneous with respect to their ability. Harbring and Irlenbusch (2005) study how the number of contestants and winners influence performance in the presence of sabotage and show that it is beneficial to equalize the number

[4] For a recent overview see Konrad (2007)

of winners and losers.

Despite the obvious similarities between the way award systems are set up and what is studied in the tournament literature, there are some limitations of the generalizability of the tournament literature to awards that make a separate analysis of awards worthwhile. First, the tournament literature typically considers standard preferences, i.e. material self-interest, and the material value of awards is often close to zero. Second, awards are not necessarily distributed as a competition. Many awards are granted according to an absolute scale, i.e. to everyone exceeding a specific target level of performance. Third, practitioners see important differences in the way that between award systems and tournament systems are typically implemented in companies. Tournaments in companies (e.g. for vacations or gifts) are typically based on precise performance measures like sales figures, whereas awards are handed out for soft factors and activities that preclude precise measurement. Also, managers by and large consider frustration by nonrecipients or low-ability employees to be less of a problem in the case of awards mainly because the material stakes involved in award incentives are typically low (a more detailed account of the results of the manager interviews are presented in chapter 3)

2.1.3 Signals

Awards derive part of their motivating power from their value as signals of unobservable characteristics to uninformed parties both within and outside of the organization.

Economics has an extensive literature on signaling that belongs to the broader field of information economics, specifically on asymmetric information. Asym-

metric information often results in market equilibria that fail to be Pareto optimal.[5] Spence (1973, 1974) proposed signals as one mechanism to overcome the induced market failure. The basic idea is that the presence of signals allows informed individuals to signal information about their unobservable type through observable action, an action that individuals of the other type do not want to imitate. One example for a signal of ability may be a costless test that reliably reveals the type of the worker. Another prominent example is education, which has signal value if the cost of education is lower for high-productivitiy types and if this results in high-productivity workers getting more education in equilibrium than low-productivity workers. Signals are only informative in a separating equilibrium because this allows the high-ability individuals to "prove" their type.

Awards may motivate when they signal an agent's performance to outsiders, when outsiders cannot observe the agent's performance directly, but have access to information on awards as a coarse measure of the agent's performance (see Ariely et al., 2009 or Andreoni and Petrie, 2004 for a similar argument on why the provision of plaques can increase donations). Similarly, awards can be understood as signals of unobservable individual characteristics, like dedication and employee motivation to uninformed parties both

[5] Basic set-ups of asymmetric information are described, for instance, in Mas-Colell et al. (1995). One example is a setting in which firms cannot directly observe worker productivity. As firms cannot distinguish between high- and low-productivity workers, they offer a uniform wage to all employees, which corresponds to the average productivity in the market. In the presence of a high number of low-productivity workers, the average productivity and hence the average wage is below the reservation wage of high-productivity workers, so that these leave the market. But once the best workers are driven out of the market, the average productivity of the workforce falls, thereby further lowering the wage that firms are willing to pay. As both firms and high-ability workers have incentives to enable companies to distinguish among workers, mechanisms are developed and used in the marketplace that achieve this objective.

within and outside the company.[6] For example, motivation and certain abilities may only become apparent during the course of employment. Therefore, the employee can, for example, use an award for outstanding performance or high motivation to credibly signal his ability and dedication to outside employers, information that otherwise could not be credibly communicated. At the same time, awards may also have signaling value of and bring prestige with respect to other "targets", such as the local community, family and friends or other social networks (English, 2004, p. 91). In fact, awards have been explicitly shown to be signals of expertise (Heppner and Steve, 1977).[7] The signaling literature is relevant for understanding the motivating power of awards because employees are willing to exert effort to obtain an award

[6] One might argue that companies have no interest in installing award systems that increase the outside options of their employees and likely result in demands for higher wages. Hence, one would expect that companies only install awards that can be used as signals within the company, but not outside. This argument is parallel to the one that firms should not invest in the general human capital of their employees because this augments the worker's productivity in the same way in multiple firms so that she reaps the whole rent of the investment. Firms should only invest in firm-specific human capital that makes the worker more productive in her current firm, but not elsewhere (Becker, 1962; Parsons, 1972; Hashimoto, 1981). However, it has been shown that companies in fact do invest in the general human capital of their employees. Arguments brought forward for this phenomenon rest on market imperfections that render the benefit of the investment larger within the company than what the employee can market outside the company. Examples of such market imperfections are asymmetric information about the value of the human capital investment (Katz and Ziderman, 1990) and the existence of job market institutions that compress wages (Acemoglu and Pischke, 1998, 1999). As for awards this means that companies may be willing to install awards with signal value for the employee as long as the value of the award system to the company is larger than the costs associated with the outside advantages it brings to the employee. Possible channels are imperfect information, i.e. that award winners are typically only announced within the company so that this information does not become immediately available to outsiders or that outside parties infer the value of the award in terms of employee productivity less than perfectly.

[7] Similarly, it has been argued that individuals contribute to charities because contributions signal wealth (Glazer and Konrad, 1996) and that people care about status because status is considered to be a signal of non-observable abilities (Rege, 2008).

to reap the benefits in terms of outside job offers, wage increases, access to networks or prestige.

2.1.4 Beliefs and information between the principal and the agent

Economics has long analyzed the role of information and beliefs on behavior. In contrast to the last section, where the employee had private information important for the employer, this section discusses the role of awards in changing the beliefs and available information of the employee, both of which may alter her behavior.

Information and beliefs are typically studied in settings of choice under uncertainty and state-dependent utility, i.e. when preferences among outcomes depend on the state of nature under which the outcome occurs. This framework is relevant for the study of awards, as the announcement of a new award and the publication of the winning individuals' activities inform employees, for instance, about the kinds of activities the company values. This information is relevant for the decisions of the employee because behavior in accordance with company goals may result in pay rises or promotions. Further, information on award-winning behaviors allows other employees to update their beliefs on the effort necessary to win an award. Similarly, awards provide feedback on the employer's belief about the agent, which enables the agent to update her beliefs about upcoming wage raises and promotions.[8] The aforementioned channels provide rationales for why employees strive for approval from their employer and may do so by pursuing company awards (Ellingsen and Johannesson, 2007).

[8] Organizational psychologists consider feedback to be an essential element of formal and informal recognition programs (Luthans and Stajkovic, 2000; Stajkovic and Luthans, 2003).

The information value of awards can also be substantiated with social cognitive theory and goal-setting theory in psychology. Social cognitive theory was proposed by Bandura (1986) and builds on social learning theory (Rotter, 1954; Bandura, 1976). It presents an advancement of reinforcement and learning theories by focusing on the specific human capabilities to learn by observation and to plan in advance. Specifically, information on the behaviors of winners allows nonrecipients to copy these behaviors, anticipating that this may also result in an award for them. Further, awards provide feedback concerning own performance and enhances role clarity about the task performed (Bandura, 1986 and Kluger and DeNisi, 1996). In line with signaling theory, Bandura (1986, p. 235) argues that social rewards, such as awards, derive their motivating power from their value as predictors for future material rewards rather than from the social reward itself. Goal-setting theory emerged in the late 1960s as researchers began to discover that the simple act of specifying targets for behavior enhanced task performance (Locke, 1968, 1996; Steers and Porter, 1974). Research in this area led to the development of a formal theory of goal setting (Locke and Latham, 1990a), which rests on the basic premise that an employee's conscious intentions (goals) are primary determinants of task-related motivation because goals direct thoughts and actions (Locke, 1968). Multiple reviews and meta-analyses of the goal-setting literature have provided substantial support for goal-setting theory and have shown that goal specificity, goal difficulty, and goal commitment each serve to enhance task performance (Locke and Latham, 1990a,b; Wofford et al., 1992). Hence, awards have a positive impact on effort when they help to establish clear and specific performance goals for the employees.

Beyond what can be explained in terms of narrow material self-interest, information on colleagues' actions that awards provide may influence behav-

ior because such information may shift an individual's understanding of what is considered appropriate behavior (see, for instance, Bazerman et al., 1992; Loewenstein et al., 1989; Berkowitz, 1972, on social comparison). That is, if people care about how their contributions compare to some "standard", then providing information on others' behavior may be important. Awards may also have an impact on corporate culture and affect what individuals consider to be behavioral norms. This may influence behavior if individuals have a preference for conditional cooperation or conformity (also see the discussion of social norms below). Thereby, awards may have an expressive function similar to what is discussed in the context of law (Cooter and Bohnet, 2003 and McAdams, 1997, p. 397ff).

The preceding sections provided an overview of standard economic and psychological approaches for understanding how awards induce higher effort in the workplace. First, principal-agent theory helps to explain awards as a part of variable compensation, which is necessary to align the interests of the principal and the agent. Second, an analogy to the tournament literature was drawn because many awards can be understood as prizes in a tournament. Third, the signaling literature was presented, because awards may motivate due to their capacity to signal unobservable characteristics of the employee, such as ability, motivation, and intra-organizational status, to uninformed but interested third parties. Fourth, awards may also motivate due to their impact on the beliefs and information of the employee when awards are used to communicate to the agent which kinds of activity and effort level the company values.

While they do not exclude non-monetary motives per se, the frameworks presented above have traditionally been discussed in terms of material self-

interest. As for awards this implies that they motivate as signals when they lead to attractive new job offers or wage increases; they motivate as tournament prizes insofar as they bring immediate or future monetary benefits; they motivate due to the information they provide on the activities and effort level the company desires if complying with these wishes results in pay raises or promotions. The following sections present economic approaches that go beyond material self-interest, explaining how non-material awards may affect performance.

2.2 Motivators Beyond Material Self-interest

The material self-interest approach has had great success in many areas of economics and beyond (Becker, 1976; Stigler, 1984; Frey, 2000, 2004; Lazear, 2000a). At the same time, as was mentioned above, standard theory is not generally incompatible with non-material motives. It merely assumes that work provides disutility to the worker and better performance requires greater effort. It therefore predicts that reward systems align the interests of employee and employer by ensuring that a worker's expected utility increases with observed productivity. In principle, standard theory is agnostic about what the offered rewards may be as long as they raise the employee's utility. Hence, many different forms of reward are compatible with the theory, including praise from superiors and co-workers, feelings of self-esteem that come from superior achievement and recognition, and current and future cash rewards related to performance. That humans are motivated by factors other than material self-interest has been explicitly addressed in early works in eco-

nomics.[9] However, economists, "while recognizing that non-monetary rewards for performance can be important, tend to focus on monetary rewards because individuals are willing to substitute non-monetary for monetary rewards and because money represents a generalized claim on resources and is therefore in general preferred over an equal dollar-value payment in kind" (Baker et al., 1988). Therefore, the economics literature has mostly neglected non-monetary motivators and focused on material incentives (Ellingsen and Johannesson, 2007; Frey and Benz, 2008), and the study of the psychological mechanisms relevant in decision making was lost (Lewin, 1996).

Other reasons for their neglect are the conviction that social motives do not systematically shape decisions and behavior in economically relevant areas such as employment or market situations; that even if they do, such behaviors lead to worse outcomes than those in line with material self-interest are pay-off dominated and therefore disappear over time; and that simple models abstracting from social motives present better explanations of observable — even social — phenomena. Specifically, there was a reluctance to include such concerns primarily because models that included them often allow such a broad range of behavior that there are few, if any, restrictions on equilibrium behavior. Hence, such models have little or no predictive power (Postlewaite, 1998).

However, by focusing only on material self-interest economics has failed to account for a number of robust, systematic and economically relevant empirical phenomena. There is now a substantial body of evidence documenting

[9] Smith (2002 / 1759, p. 116), for instance, writes that "Nature, when she formed man for society, endowed him with an original desire to please, and an original aversion to offend his brethren. She taught him to feel pleasure in their favorable, and pain in their unfavorable regard. She rendered their approbation most flattering and most agreeable to him for its own sake; and their disapprobation most mortifying and most offensive."

deviations from the standard model in the form of altruism, fairness concerns or spitefulness in economically relevant settings (Fehr and Falk, 2002; Ellingsen and Johannesson, 2007, provide overviews), and more generally non-standard preferences, non-standard beliefs, and non-standard decision making (DellaVigna, Forthcoming).

Recent years have seen a number of attempts to augment the standard utility framework with non-pecuniary motivations to reconcile economic theory with a wider array of empirically observable behavior. First, approaches are presented that account for the fact that individuals care about how they fare relative to others and about what others think about them (status, social approval, attention). This is followed by approaches that focus on concerns about self-image and identity. The section concludes with a discussion of intrinsic motivation.

2.2.1 Status

Weber defines status as "an effective claim to social esteem in terms of negative or positive privileges" (Weber, 1978/1922, p. 305). A more recent definition is provided by Ridgeway and Walker (1995, p. 281) who define status structures as "rank-ordered relationships among actors that describe the interactional inequalities formed from actors' implicit valuations of themselves and one another according to some shared standard of value." The latter definition corresponds to how status is typically modeled by economists, where status is understood as a rank ordering of individuals. Hence, by definition, the increase in rank of one person is associated with the decrease in rank of others. This implies that status is a scarce resource and status competition a zero-sum game.

It is generally acknowledged in economics that people care about social status. Early accounts of the importance of status concerns as sources for behavior can, for instance, be found in Smith (2002 / 1759, p. 61) ("It is the vanity, not the ease or the pleasure which interests us.") and Veblen (1953 / 1899, p. 136) ("At this quasi-peaceable stage the law of status is the dominant feature in the scheme of life"). More recent well-known accounts of status concerns and their implication for macroeconomic variables such as savings, wages and growth are provided in Frank (1985) and Fershtman and Weiss (1998b). Ball et al. (2001) show in a laboratory experiment that an exogenous and random distribution of status has an impact on subsequent market outcomes and individual earnings, as higher status individuals earn significantly more than their lower status counterparts. Despite this general acknowledgement of status as a motivator, there is some discussion about the proper modeling strategy. Letting status be an argument in the utility function is what Postlewaite (1998) calls the "direct" approach. It has found its most compelling support in an evolutionary argument developed in Fershtman and Weiss (1998a).[10] There is also experimental evidence that people value sta-

[10] Evolutionary anthropologists have long recognized that status behavior has its roots in a general primate tendency toward social hierarchy, which allows competition among group members (for food, mates, sleeping sites) to be performed efficiently with as little injury or risk of injury as possible (e.g., Barkow, 1975, de Waal, 1989 and Chapais, 1991). More recently, Henrich and Gil-White (2201) show that both the desire for status as well as acts of deference can be explained evolutionarily, and Bisin and Verdier (1998) show that there are stable equilibria in which part of the population have a preference for status. Endocrine studies support the evolutionary aspect of status by demonstrating the existence of a genetic component to reactions to alterations of status. Increases in status caused, for instance, by a victory in a competition, are shown to be associated with a heightened level of testosterone, which in turn increases competitive behavior (Booth et al., 1989; Mazur and Booth, 1998). Zizzo (2002) provides evidence for a positive correlation between relative position and the neurotransmitter serotonin in non-human primates. A number of studies have demonstrated a positive impact of high status on physiological outcomes such as health and longevity

tus independently of any material consequence; that they are even willing to incur costs to obtain it (Huberman et al., 2004). The proponents of an alternative "instrumental" approach, where status indirectly affects individuals' consumption level, criticize the direct approach for lacking robustness as its results are sensitive to the exact specification of the utility function (Postlewaite, 1998).

Relevant for awards is the anthropological evidence that suggests that, in contrast to non-human primates, status among humans is largely symbolic, can rest on multiple criteria, and can, to some extent, be selected by the group (Barkow, 1989, Chapter 8). The possibility of shaping status behavior is also emphasized by the sociological literature and has important implication for the instrumental use of status considerations as incentives.

The preceding considerations and evidence suggest that awards motivate if they are perceived as symbols of status. Then, awards work as incentives because employees are willing to exert additional effort to win them and thereby enhance their status. Awards, once received, may also lead to a sustainable increase in effort upon receipt, if the induced change in social standing affects the costs and/or benefits of performance. Further, awards may influence the dimensions according to which status is granted within the organization, and so awards may shape norms within the organization and as a result corporate culture. At the same time, awards motivate due to their capacity to serve as sustainable reminders of a person's high status for herself and others. Additionally, awards inform outsiders that may not know about the intra-organizational status of the individual. It is, for instance, argued that medals

(Marmot, 2004; Rablen and Oswald, 2008; Redelmeier and Singh, 2001). Hopcroft (2005) shows that in the contemporary U.S. higher status males have more offspring than lower status males.

and trophies that make status rewards more durable encourage higher levels of a given action (Jaeger, 2004).

After having established that awards motivate due to their effect on the recipient's status, the following section provides a variety of more specific implications of the status literature for corporate awards. Specifically, this section presents those studies on impact of status concerns in the workplace that have direct implications for understanding awards beyond what has already been discussed above. Auriol and Renault (2008) argue in their theoretical model that status and income are complements, suggesting that awards may work well for individuals with a relatively high salary. Moreover, they demonstrate that status incentives in the form of promotions are more effective in inducing effort than pay-for-performance systems in long-term work relationships. The model of Ederer and Patacconi (2008) provides the theoretical basis for the superiority of evaluation schemes like award systems that reward winners without explicitly identifying losers. Moldovanu et al. (2007) and Dubey and Geanakoplos (2005) show theoretically that discrete incentive instruments or coarse status categories with as little as one individual in the top class may be preferable to continuous, objective incentives when individuals care about how they perform relative to others. Smeets (2004) analyzes a setting with several tasks, i.e. a private task with variable pay and a task with a collective good character. She shows that in such a setting, status incentives can encourage employees to identify with the organization and thereby ensure contributions to the public good. The model resembles award systems in companies closely as company awards are typically handed out for behaviors that cannot be contractually stipulated and depend on contributions to public goods like organizing workshops or helping colleagues. Fershtman

et al. (Forthcoming) show that companies should ensure that their workforce is heterogeneous with respect to the importance that the individuals attribute to status as well as to their reference group. The intuition is that in a mixed workforce the negative externalities of high status on lower status agents are mitigated if these lower status agents do not care about status or have a reference group outside the company. Loch et al. (2000) point out that status competition based on merit can push group members to work hard. However, if status can also be achieved through political maneuvering, it can lead to lower overall performance. In another paper (Loch et al., 2001), the authors explore the managerial consequences of status competition in organizations. Managers can ensure that employees' efforts to increase their status are channeled towards production rather than sabotage or politicking by by manipulating the criteria along which status is awarded. Recognition by a hierarchical supervisor is considered as one way to lend weight to a status criterion. Loch et al. (2001) also mention the creation of non-monetary symbols of status, like awards, as one possible way of reaping the benefits of seeking status without incurring high financial costs. In doing so, the management needs to credibly commit to the values and goals of the award system; such symbols cannot be created arbitrarily. Specifically, the symbols should be kept scarce because status is relative. Additionally, management should not ignore the fact that the size of bonus payments also creates a status hierarchy. A different aspect is modeled in Besley and Ghatak (2008) who analyze a principal-agent setting with social incentives, such as job titles or awards that have zero marginal costs. Managerial costs of zero imply that it is incentive compatible for the principal to award them even if the agent's output is only observable for the principal. Hence, one would expect awards to be used for

activities in which it is hard for the agent to assess and document his or her contribution to the principal's profit.

Despite this large theoretical literature, there is very little empirical work documenting the impact of status concerns in the workplace. Only Greenberg (1988) and Greenberg and Ornstein (1983) show exogenously varied social standing affects productivity. The authors vary status by randomly assigning subjects to higher- and lower-status offices and titles.

2.2.2 Image motivation, social approval, respect, prestige, regard

In recent years, economics has seen a growing literature on image motivation and the need for social approval, respect, prestige and regard.[11] Distinctive about this body of literature is the focus on self-regarding motives such as pride and shame (in contrast to the social preference approaches that capture other-regarding motives such as altruism or reciprocity). The analyses typically do not assume a rank ordering of subjects and zero-sum interactions, as the status literature discussed above does.[12] Most relevant for this thesis are those approaches that study the impact of social approval motives on prosocial behavior, contributions to public goods, and the adherence to norms, as these are exactly the kinds of behaviors that employers often try to elicit with awards. This section presents a selection of papers from this body of literature with direct implications for awards.

[11] A general analysis of esteem and its exchange are provided in Brennan and Pettit (2004).

[12] However, in terms of terminology as well as models, the distinction between prestige, recognition and approval on the one hand and status on the other is far from clear-cut. For the purpose of this analysis, all approaches that explicitly talk about status and assume zero-sum preferences over rankings are attributed to the status section, whereas the other approaches are presented here.

The important role of social approval for behavior was already recognized by Smith (2002 / 1759) in the *Theory of Moral Sentiments* where he wrote: "We are pleased to think that we have rendered ourselves the natural objects of approbation, [...] and we are mortified to reflect that we have justly merited the blame of those we live with." Likewise, Harsanyi (1969) was convinced that social approval is important: "People's behaviour can largely be explained in terms of two dominant interests: economic gain and social acceptance." Psychology has long acknowledged and widely discussed the existence and consequences of an inherent need for recognition. Specifically, these approaches belong to the literature on need theories.

Similar to the economic concept of preferences, needs are defined as deficiencies that energize or trigger behaviors to reduce or satisfy those needs. Most prominent is the hierarchy of needs by Maslow (1943), who proposes a hierarchy of five basic need categories, the two highest of which are esteem, which includes self-esteem through personal achievement as well as social esteem through recognition and respect from others and self-actualization, which represents the need for self-fulfillment — a sense that the person's potential has been realized. Prominent extensions of this initial formulation are Alderfer (1969), who reduces the number of need categories to three, and the theory of socially acquired needs (McClelland, 1985, 1987; McClelland and Winter, 1969). The most prominent need theory focusing on job attributes was introduced in Herzberg et al. (1959) and Herzberg (1966, 1968). In his motivation-hygiene theory, Herzberg argues that work motivation is composed of two largely unrelated dimensions: (1) job-related factors which can prevent dissatisfaction but do not promote employees' growth and development (hygiene factors), such as working conditions and security; and (2)

factors associated with job satisfaction (motivators) like achievement, recognition, the work itself, and advancement. The need for recognition has also been acknowledged in the management literature. Magnus (1981) argues that public demonstrations of appreciation may be better means to increase productivity than salary raises.

That such concerns are behaviorally relevant has also been documented empirically. Ellingsen and Johannesson (2007) lay out a body of evidence that taken together shows that employees value and respond positively to signs of respect, such as symbolic awards, attention, and trust. Further, there is much circumstantial and questionnaire evidence supporting the view that people care about (dis)approval (e.g., Lindbeck, 1995, 1997). As was mentioned before, recognition was identified to be a top motivator for U.S. workers (Wiley, 1997) and the lack of recognition a major reason why people leave organizations (Elsdon, 2002). In organizational behavior, there is a considerable literature that shows that if social recognition is applied on a contingent basis, it is a powerful incentive motivator for performance improvement (Stajkovic and Luthans, 1997, 2001, 2003). Specifically, Peterson and Luthans (2006) show that financial and non-financial incentives have an equally significant impact on employee turnover and Stajkovic and Luthans (2003) show that social recognition in the form of praise has a significant positive impact on performance.

The economic literature provides experimental evidence on the role of image motivation understood as the desire to be liked and well-regarded by others. Ariely et al. (2009), for example, show that image-concerns are an important driver of pro-social behavior. Specifically, they show that — without any private incentives — subjects put forth significantly higher effort for a task

associated with positive image in a public than in a private setting. That revelation of a subject's identity as well as the size of her contribution increases contributions to a public good is confirmed by Andreoni and Petrie (2004) and Rege and Telle (2004). In line with a desire for social approval, the latter study additionally shows that framing the public good game in a language that makes social and internalized norms for cooperation salient is also associated with larger contributions. Masclet et al. (2003) demonstrate experimentally that an option to show disapproval raises contributions even when there are no material consequences connected with it. Murnighan et al. (2001) find that the fairness of offers in dictator games is signiÞcantly decreased when the precision with which offerers can split the cake is decreased. The lower precision allows offerers to construe the outcomes as largely outside their control. Therefore agents no longer feel the need to sacrifice material income to avoid social disapproval. Harbaugh (1998) documents the role of prestige motives for charitable giving in the field. Closely related to the subject of this thesis is the field experiment of Markham et al. (2002) who show that the introduction of a public recognition program reduces absenteeism by 52 percent in the last quarter of their study. A large body of empirical evidence documents the importance of approval motives for charitable giving and voluntary cooperation — important kinds of activities in any organization.

Hence, awards serve as incentives when they are acknowledged as symbols of respect and approval, and when they contribute to a positive image towards others. Ellingsen and Johannesson (2007) even state that, if workers care about approval, employers can pay them with a combination of monetary rewards and respect rather than with money alone.

Awards can also influence norms and the sources of esteem. This argu-

ment is parallel to the one above on awards' influence on the sources of status. Ellingsen and Johannesson (2007), for instance, argue that a company can highlight desirable worker traits and thereby shape the organizational culture. When a company, for example, gives prizes for cooperation it is utilizing its power to define the sources of esteem. Insofar as awards help to shape corporate norms, concerns for social approval ensure that these persist even if they are disadvantageous for the individual.[13] Therefore, any instrument that shapes organizational norms is valuable for companies. Norms can, for instance, serve to mitigate multi-tasking problems caused by distorting financial incentives (Bruggen and Moers, 2007). In this context, awards have an information function as they reveal both the kinds of behaviors the company values and also the behaviors of other employees — the award winners. Thereby, they signal what one "should" do and potentially create a norm.

Awards may also have an impact on aspects of corporate culture other than norms. Awards motivate when they are interpreted as signals of kind intentions, attention and regard. That intentions matter has been demonstrated by a large literature on reciprocity (Fehr and Gächter, 2000, provide a recent overview). It has been shown that nonfinancial incentives are viewed by employees as an attempt to create a positive climate. Employees reciprocate this with prosocial citizenship behaviors and engagement, which raises the performance of the organization (Goodman, 2000). Further, employees care about whether their employer is genuinely altruistic towards them and attention is a more credible signal of altruism than high wages (Dur, 2008). Similarly,

[13] According to Akerlof (1980) the binding force of norms lies in the social sanction imposed by loss of reputation from breaking the custom. Hence, people wish not to deviate from social norms insofar as they care about approval and/or the potential sanctions imposed on them (see e.g., Cialdini and Goldstein, 2004; Messick, 1999).

gifts-in-kind are more salient signals of kind intentions in the workplace than wage increases (Kube et al., 2008). Therefore, signals of attentions and symbolic rewards cause greater reciprocal reactions and hence, larger increases in effort than monetary rewards.

2.2.3 Self-image and identity

Closely related to the last section is the recent literature on self-image concerns. Smith (2002 / 1759, Part III, Chap. I) describes this motive for acting in a moral or unselfish way in terms of individuals assessing their own conduct through the eyes of an "impartial spectator", an "ideal mate within the breast." He also expressed the close connection between concerns for a good self-image and social approval. "[...] social approval is therefore closely related to self-approval [...] when actors also want to be worthy of praise, they engage in moral behavior even when unobserved" (Smith, 2002 / 1759, p. 166). In more contemporary terms, psychologists and sociologists describe people's behavior as being influenced by a strong need to maintain conformity between one's behavior and certain values, long-term goals or identities. According to Batson (1998), "the ability to pat oneself on the back and feeling good about being a kind, caring person, can be a powerful incentive to help."

As for empirical relevance, much of the evidence cited in the last section is also compatible with self-image concerns. Additionally, Kahneman and Knetsch (1992) find that subjects' stated willingness to pay for different public goods is well predicted by independent assessments of the associated "moral satisfaction". In psychology, it is generally agreed that self-confidence or a person's belief of how capable he or she is to accomplish his

or her goals (e.g., Bandura (1977, Chap. 1) on self-efficacy) directly influences behavior. There is also evidence that even in anonymous situations, people follow internalized norms because they otherwise suffer from guilt, shame or fear (Coleman, 1990). Dana et al. (2006) show that people are willing to sacrifice money to retain a positive image even with respect to an anonymous counterpart in a dictator game setting.

Hence, individuals care about a positive self-image. Therefore, awards can induce effort 1) when they have an impact on self-image; 2) when they influence what behavior is associated with a good image; and 3) when they provide performance-related feedback and individuals care about how they perform relative to others. The second point corresponds to the capacity of awards to shape which behaviors earn status. People may also comply with norms not only to avoid disapproval from others, but to avoid cognitive dissonance (Festinger, 1957) or an unfavorable assessment of themselves when they have internalized the norms or support them. Covaleski et al. (1998, p. 313), for example, show that employees internalize both company goals and individual goals. Akerlof (1980) highlights these two channels when arguing that people adhere to norms because they care about their reputations in their respective communities, and, for believers in the "community's code of honor", when they care about the agreement of their actions with that code. In companies these codes can be understood as part of the corporate culture. Again, awards can serve the function of making the goals of both the company and the individual salient.

Apart from the general discussion of the role of self-image concerns for behavior, there are smaller, more specialized discussions of self-confidence and identity. Bénabou and Tirole (2002, 2003, 2004, 2006a,b) present a se-

ries of models around self-image concerns. All rest on the premise that individuals have imperfect knowledge about themselves, i.e. their character and ability, and the nature of the situation or task, such as the costs and benefits associated with executing a project. In such a setting, individuals use their own actions and the actions of others as signals for these variables, and this knowledge in turn influences their performance. Underlying this self-signaling is the fact that actions are more memorable than exact motivations.[14] Bénabou and Tirole (2004, 2006a) focus on self-signaling, i.e. the inferences that individuals draw from their own actions about personal characteristics such as their willpower and identity. In such a setting, awards may motivate by making specific actions of the individual more salient and by serving as durable reminders of the award-winning successes (see Jeffrey and Shaffer, 2007 for a discussion of this and other benefits of tangible rewards). It is, however, not clear ex ante whether this increases or decreases the desired performance. On the one hand, self-confidence may be improved, which motivates individuals and leads them to approach more challenging projects. On the other hand, the durability of awards as a reminder of one's "good deeds" may reduce the need for further contributions. Hence, the overall effect of awards on prosocial activities is ambiguous at the level of the individual. At the level of the company, the decision to implement awards also depends on whether self-image and approval motives lead to an over- or underprovision of public goods in the absence of the award scheme.

Bénabou and Tirole (2003, 2006b) focus on the inferences people make from the actions of others on the nature of their motivation (intrinsic or ex-

[14] Similar arguments can be found in Bodner and Prelec, 2003. In psychology, the idea that individuals take their actions as diagnostic of their preferences originated with Bem (1972), but it also relates to cognitive dissonance theory (Festinger and Carlsmith, 1958).

trinsic), their ability, and the difficulty of the task. The premise is that the principal has more information than the agent about these variables and that knowledge on these variables affects an agent's performance because she only undertakes an activity if she expects to succeed. In such a setting, extrinsic incentives may cause a decrease in praiseworthy behavior if it signals to the agent that the task is not intrinsically rewarding. At the same time, high-powered incentives may convey bad news about the difficulty of the task or the ability of the agent.[15] Awards, in contrast, less likely signal to the agent that she is of low ability. Rather, they serve as credible and sustainable signals of competence — increasing motivation and performance, as the need for competence is a powerful motivator (White, 1959).[16]

Related is the argument that subjective evaluations in the form of discretionary bonuses serve as feedback for performance, which in turn inform the agent about her ability, affecting self-confidence and motivation (Suvorov and van de Ven, 2006). Hence, awards motivate by signaling an agent's ability to herself. In this role, awards should work best when workers are in their learning phase, produce a complex good, or contribute to a project that involves many individual tasks so that experience and overview enables the manager to form a better judgment of an employee's performance. An implication of this literature is that a monetary component to the feedback is necessary to make the information credible, as the principal would otherwise have an incentive to offer the reward even after bad performance in order not to de-

[15] The next section further investigates negative effects of extrinsic incentives on intrinsic motivation.

[16] The link between self-esteem and behavior is further discussed in Bénabou and Tirole (2002) where it is argued that persons confident in their abilities are typically highly motivated and undertake more challenging tasks.

motivate the agent. This may be one explanation for why awards are so often accompanied with monetary bonuses in the corporate sector despite the fact that managers and employees say that the payment is not central to the award (the findings of the manager interviews are presented in chapter 3). Another implication is that, while motivation increases with the size of the bonus in general, even small, insignificant rewards can have a substantial impact on the agent's subsequent motivation when the principal's stake in the project is small.[17] Mostly the direct material consequences of activities that are typically rewarded with awards, such as substituting for colleagues or organizing workshops, are low for the principal. This may explain the observation that award bonuses are typically relatively small.

Cowen and Glazer (2007) explain the observation that people fear and try to avoid evaluations because they have a preference for a favorable self-image, and they are risk-averse with respect to their self-image. Therefore, they fear bad evaluations more than they experience joy from good ones. Similarly, Köszegi (2006) shows that individuals may avoid actions that are informative about their self-image, when they are satisfied with current beliefs about themselves. This also explains an aversion to performance bonuses because these are typically informative about own ability as well as the distribution of abilities in the workforce. Similar to what was concluded by Ederer and Patacconi (2008) on status concerns, it may hence be preferable to reward good performers without identifying bad ones, as is true for award systems. Specifically, there is only one or a small number of winners in typical award schemes, so that even non-recipients do not suffer a big loss in self-image be-

[17] The intuition is that if the principal derives higher benefits from a success, a bonus of a given size becomes relatively less costly, and the principle has to increase the size of the bonus to keep it credible in equilibrium.

cause they can still believe that their ability is almost as high as the one of the winners. This implies that the company does not have to compensate workers for the risk of receiving negative information about themselves, and the workforce is better motivated as all employees — rightly or wrongly — can feel good about themselves. The trade-off for the company, however, is that individuals may be overconfident in their abilities, which may have negative effects on performance.[18]

The second approach in the literature on self-image focuses on the behavioral consequences of identity. Awards may motivate via identity concerns because they have the potential to influence the identity of award winners by sustainably changing preferences, i.e. increasing the benefit of exerting effort for the company or reducing effort costs. The concept of identity, i.e. an individual's sense of self as an individual and as part of a group, has been introduced into economics by Akerlof and Kranton (2000), extended in Akerlof and Kranton (2002) and applied to the work setting in Akerlof and Kranton (2005, 2008).[19] They assume that an individual's utility depends on consumption as well as on identity, which is composed of the status of the social group one identifies with and the degree to which one's actions conform to what is considered to be appropriate behavior (ideal type) in that particular

[18] Related is the argument that a prize with a low chance of winning and many highly qualified applicants who do not win, does not deter applicants because not winning the prize then does not necessarily imply bad news about the employee's performance or ability. Indeed, a prize committee that rejects some highly qualified applicants may find that it can encourage more effort, but to do so, its prize selection must show some imperfection or noise in selecting the best competitors (Hollaender, 1990).

[19] A prominent account of identity in social psychology is Tajfel and Turner (1979). The concept of identity is also widely discussed in sociology. Weber (1978, pp. 958f), for instance, emphasizes the identification of the officeholder with the office itself. "An office is a vocation;" and "entrance into an office [...] is considered an acceptance of a specific duty of fealty to the purpose of the office."

group. Individuals are, to some extent, free in choosing the category/group they identify with as well as their actions.[20] Central for the discussion of awards is that the number and kinds of social categories can be influenced as well as the associated social prescriptions. This has important implications for an analysis of awards. First, companies can create social categories with awards, such as "the high-performer" or "the helpful person" via the establishment of different kinds of awards. Second, they can establish ideal types associated with each category by publicizing and honoring the award winning behaviors. Third, companies face a trade-off in creating these ideal types: the more categories are created, the more likely employees identify with at least one of them and, hence, act accordingly. However, the more categories there are, the less likely are individuals to identify with those categories that the company values most. This may explain why organizations typically order their awards in a hierarchy. The hierarchy is communicated both directly and via differences in the amounts of the monetary bonuses and degrees of publicity or honor. Fourth, companies also face a trade-off with respect to the performance ideal promoted: The higher the performance ideal, the higher the effort of the top achievers. At the same time, however, a greater number of people may resign and opt out of the "high-achiever" social category.

Because identity reduces the need for monetary rewards, it can be viewed as a new type of firm capital, motivational capital, that may be worthwhile investing in (Akerlof and Kranton, 2005). In fact, if workers identify with the company they work hard even in the absence of contingent rewards because they have a loss in utility if they do not follow the rules of their superiors and do not act in the interests of the organization. Directly relevant for awards is

[20] Similarly, in Bénabou and Tirole (2006a) individuals can invest in identity-building.

that they suggest that rituals and other organizational features can change the way people see themselves. In particular, initiation rites can lead individuals to take on a different self-image because the individual must explain to herself why she has (willingly) accepted such treatment (see Aronson, 1984, Chap. 4, pp. 113–179 or Festinger, 1957, on cognitive dissonance). Award ceremonies can serve as such initiation rites.

In the context of self-image concerns, another channel via which awards may affect behavior is their impact on what agents perceive to be their in-group. Research in psychology and sociology shows that even arbitrary signals can induce individuals to identify with a group, leading to in-group favoritism and loyalty and out-group discrimination (see Tajfel, 1978 on the minimal group paradigm).[21] There is overwhelming evidence suggesting that people cooperate more with members of their in-group than with individuals who are not part of it (e.g., Kollock, 1998; Goette et al., 2006; Bernhard et al., 2006). Hence, awards benefit the company if they create the feelings that all employees form a single in-group, counteracting the otherwise spontaneously emerging subgroups that often hinder cooperation and information flow. A group feeling can, for instance, be induced with an award ceremony at which the entire workforce is present.

2.2.4 Intrinsic motivation

This section discusses the impact of incentives on intrinsic motivation, establishing that awards affect behavior via their impact on intrinsic motivation. Some of the issues that have been addressed above also have implications for

[21] The importance of organizational identification for understanding work behavior has long been recognized by industrial psychologists (Patchen, 1970; Dutton et al., 1994; Lee, 1971). Also see Tajfel and Turner (1979) on the role of group identities.

intrinsic motivation. Akerlof and Kranton (2008), for instance, suggests that behavior driven by concerns for identity can be classified as intrinsically motivated behavior. Therefore, this section addresses the effect of incentives on intrinsic motivation beyond what has already been captured in the analyses of self-image and social recognition above. Due to the large number of studies and theories on intrinsic motivation and the potential negative impact of extrinsic incentives, an illuminating, yet incomplete, selection of theoretical and empirical accounts is presented below. Specific weight is given to accounts of the negative impact of monetary incentives on intrinsic motivation. Hence, this section differs somewhat from the other sections because less work is done on generalizing existing findings to awards. Rather, the knowledge on intrinsic motivation and the crowding out effect is merely presented. These facts then serve as the basis for discussing how the crowding effect may differ between extrinsic incentives in the form of performance pay and awards in chapter 3.1.3.

Building on earlier works in psychology (e.g., Deci and Ryan, 1971) and early empirical documentations (e.g., Titmuss, 1970), Frey (1993a, 1994, 1997) introduced the concept of intrinsic motivation and its crowding out by extrinsic incentives into economics. Since then the effect, its validity, and its causes have been lively debated in both psychology and economics (Eisenberger and Cameron, 1996; Deci et al., 1999; Frey and Jegen, 2001; Kunz and Pfaff, 2002; Weibel et al., 2007). There are several explanations of the crowding out phenomenon that have implications for awards and specifically, why they may have different consequences for intrinsic motivation than monetary rewards.

Deci and Ryan (1985) and Frey (1997) argue that there is a direct link

between monetary rewards and performance. Cognitive Evaluation Theory (Deci and Ryan, 1971, 1985) suggests that there are two motivational subsystems: extrinsic and intrinsic. Intrinsically motivated persons have an "internal locus of causality". That is, intrinsically motivated individuals attribute the cause of their behavior to internal needs and perform behaviors for intrinsic rewards and satisfaction. Aspects of the situation (e.g., the reward or the feedback system) may influence the individual as to what she considers to be the true causes her behavior. Extrinsic incentives may then induce the individual to attribute her behavior to the reward rather than some intrinsic need. Hence, perceived causation shifts from internal to external, which results in a decrease in intrinsic motivation (Deci and Ryan, 1980). At the same time, extrinsic rewards can increase intrinsic motivation when they enhance the feelings of personal competence and self-efficacy (Arnold, 1985). In the self-signaling framework discussed above (e.g., Bénabou and Tirole, 2006b), individuals have imperfect knowledge about their character traits and they use past actions to construct a self-image. This implies that individuals take the effect of current actions on future inferences about themselves into account. As compared to a situation with perfect self-knowledge, Individuals may behave differently, when the behavior affects information that is relevant for the construction of one's self-image. Crowding-out then occurs because the presence of rewards or punishments spoils the reputational (or self-reputational) value of good deeds, creating doubt as to the extent to which they were performed for the incentive rather than for intrinsic reasons, e.g., altruism. Anticipating this ambiguity, individuals reduce the associated behavior, which is in line with what psychologists refer to as the "overjustification effect" (e.g., Lepper et al., 1973). Ariely et al. (2009) provide evidence for the relevance of

self-signaling motives by showing that pro-social behavior decreases when it is public knowledge that there are additional monetary incentives attached to the activity. The authors argue that this is the case as the extrinsic incentives interact with image motivation by diluting the signaling value of pro-social behavior. The presence of an order or an external reward deprives intrinsically motivated persons of the chance to display their own interest and involvement in an activity (Frey and Jegen, 2001).

High-powered extrinsic incentives may also lower motivation when they signal to the agent that the principal is not worth impressing. The idea is that people care about social appraisal to varying degrees, and the importance of the appraisal depends on the praiseworthiness of the relevant other. The praiseworthiness of the other party is inferred from her actions. Performance pay schemes suggest to the agent that the principal is not trusting them to work hard even in the absence of monetary inducements. Because agents value approval from a trusting principal more than approval from a principal who does not trust them, approval motives for effort are reduced (Ellingsen and Johannesson, 2008). Similarly, additional monetary payments may signal to the agent that the task is boring or difficult, which in turn lowers effort (Bénabou and Tirole, 2003).

There is also a large discussion about how extrinsic incentives affect social norms and morale. The presence of monetary, individual incentives may, for instance, override individuals' concerns for contributing to a cooperative task (Rob and Zemsky, 2002). The negative impact of regulation systems on worker morale and therefore behavior is also addressed in Frey (1993b). Frey et al. (1996); Frey and Oberholzer-Gee (1997) show that compensation for local disamenities does not increase the level for support of a nuclear waste

repository among Swiss communities and argue that the payment crowds out public spirit. Fehr and Gächter (2002) show experimentally that sellers provide lower quality when they face a fine for doing so than when they do not. A similar detrimental effect is documented in Gneezy and Rustichini (2000a), where parents were more likely to pick up their children late from a day care center when facing a fine than when not.[22] Hence, the installment of monetary incentives may replace other incentives, such as the adherence to social norms and morale. This is in line with the argumentation that monetary payments change the mental frame of a situation from a voluntary social interaction to one of market exchange. This framing effect is explicitly tested and confirmed in Fehr and Gächter (2002); Cooter and Bohnet (2003); Irlenbusch and Sliwka (2007). In fact, moral behavior is often considered to be moral for the very reason that it is undertaken even when the individual incurs costs for doing so. Since moral behavior is typically associated with social approval, paying for it implies that it can no longer be considered as moral, which reduces approval incentives. Hence, rewarding people monetarily for obeying social norms may weaken norm enforcement and, therefore, lead to a gradual erosion of norm-guided behavior (Fehr and Falk, 2002).

Frey (1993a) and Fehr and Gächter (2002) further suggest that the decrease in performance may be driven by inequity aversion or reciprocity. This channel is considered to be particularly relevant when the incentive system is under direct control of the principal, whose payoff is affected by the actions of the agents. Hence, awards may also motivate if they lead to agent reciprocity when, for example, the award is perceived as a signal of kindness.

[22] Gneezy and Rustichini (2000b) show that while performance increases with the monetary amount offered, participants who were offered a small payoff performed worse than those who were offered no compensation at all.

Chapter 3.1.3 comes back to the discussion of intrinsic motivation and the potential negative effects of monetary compensation, investigating if and to what extent awards differ in this respect.

2.3 Factors That Influence Award Effectiveness

The preceding sections laid out a body of theoretical and empirical evidence that can explain the motivating power of awards beyond the approaches traditionally employed in economics. Specifically, it was shown that employees aspire to win awards when awards enhance their status, cause social recognition and prestige, and have a positive impact on self-image and identity. Further, awards may influence performance if the recognition that follows or the change in status or self-image alters the relevant costs and benefits of exerting effort. In addition, awards may influence the intrinsic motivation to undertake certain activities. This section analyzes three factors that influence the size of the effect of awards on performance: culture, business environment and strategy, and procedures.

2.3.1 Culture and country-specific context

> *"What is rewarding to different people varies greatly depending on their background, expectations, values, and needs. The value of money, response to public recognition, the desire for peer and professional respect, and the need for challenging assignments all vary according to lifestyle and culture."*
>
> Jamieson and O'Mara (1991, pp. 109–110)

The theories discussed so far mostly abstract from a number of relevant context factors of the employment relationship. Specifically, they abstract from the institutional framework, which has been shown to affect the needs of individuals and their preferences about performance incentives (Rehu et al., 2004).[23] It seems obvious that economic factors such as income level, inflation, and living conditions as well as country-specific institutional factors determine the effectiveness of incentives (Deresky, 2000, p. 411).[24]

Work also provides individuals with additional psychological benefits, such as achievement, honor, and social connectedness whose importance varies between countries. According to the Meaning of Work International Research Team (1985, p. 113), Japanese employees should find pure monetary rewards, such as raises and bonuses, more motivating than German and US employees because Japanese see work as a means to provide income,

[23] An exception is McClelland's theory of socially acquired needs discussed in section 2.2.2.

[24] One example of a relevant formal institutional framework are public health care benefits. The German law requires every employee and employer to share the costs of comprehensive mandatory health care and retirement plans, whereas there is no comprehensive coverage in the U.S. For that reason, US employees can be expected to value such benefits more highly than German employees because they are likely to have a higher expressed need in this area.

whereas Americans and Germans place more value on the social factors pertaining to work. In particular, Americans consider work as a place where one makes interesting contacts and where status and prestige can be obtained. For Germans work is related to prestige and status as well. However, they do not view working as a service to the society in the same sense as do Americans (Rehu et al., 2004).

Therefore, awards should work best in the U.S., should motivate to a somewhat lesser extent in Germany and may not be a motivator at all in Asian countries such as Japan and China. The same prediction follows from Hofstede (1991, p. 151-170) who suggests that due to their lower uncertainty avoidance', US employees should place higher importance on rewards such as stock options while Japanese employees would prefer cash income. At the same time, their higher degree of individuality should make US employees more receptive to rewards that focus on individual recognition, e.g., *Employee of the Month* rewards and positive feedback from a supervisor (Hofstede, 1991, p. 215).

Moran (1990) finds that Irish have a lower need for achievement than their American counterparts. Manso-Pinto et al. (1993) shows that Chilean managers differ from managers from other countries in their ranking of job attributes because they rank advancement, pride in one's company, pay and working conditions as more important than what has been found for managers from Britain, Hungary, Japan, and the United States. Pennings (1993) documents that these differences in attitudes and values are reflected in empirically observable differences in compensation schemes. In long-term executive compensation in the US, for instance, the amount of money "at risk" as well as the size of bonus payout is much higher than in the other countries

studied.

These statements highlight the context-dependence of incentives. Culture as well as the economic and institutional context need to be considered when making predictions for the effectiveness of awards as incentives. Despite the increasing number of cross-cultural studies, there is still little systematic research in this area. Research on culture is characterized by convenience samples and simple approaches that ask "do the groups differ?" with no unifying theory guiding this work. The studies presented allow some predictions about the effectiveness of awards in this selective set of countries. However, it is still unclear how differences in culture affect, for instance, the perceptions of and needs for specific incentives and individual reactions to work design (Ambrose and Kulik, 1999) and also the need for achievement (McClelland, 1987). This prohibits any inference from the countries studied to other settings.

2.3.2 Business context and organizational structure

Awards can and should not be studied in isolation. First, they are part of the company's incentive and compensation scheme. Second, the company is embedded in a business context that includes an industry structure and a competitive environment. Concerning the first point, Lazear and Shaw (2007) highlight the complementarity of human resources practices in the sense that doing more of one practice increases the returns of doing more of the others. Specifically, they argue that when a new practice is introduced, it often requires supporting practices to be successful. For example, teams are more productive when workers are better trained, are given team-based incentive pay, or are selected carefully for skills that are complementary. If the firm

does not introduce all practices, the teams may fail to produce higher output. Ichniowski et al. (1997) demonstrate empirically that steel factories that introduce a set of human resources measures are more successful than companies that only introduce isolated practices (Delery and Doty, 1996, come to the same conclusion). Weibel et al. (2008) highlight that for synergies to take place management needs to consider if and how to combine non-material rewards like praise and performance-dependent, extrinsic incentives. Stajkovic and Luthans (2003) conclude in a survey of 72 behavioral management studies that social recognition in the form of praise, performance feedback and money each have a significant positive impact on performance. Moreover, the effect on task performance is strongest (synergistic) when all three are used in combination.[25]

This suggests that the effectiveness of an award depends on the specific combination of material benefits, social recognition and feedback that it offers as well as on the presence or absence of other incentives in the company. Awards motivate, for instance, via their impact on organizational norms. If a particular award focuses on knowledge sharing, it can only effectively foster cooperation when other incentives do not counteract it. Hence, when introducing a new award, management needs to carefully assess the other incentives present and, if necessary, eliminate some or introduce others alongside the new award.

There is a large literature in organizational psychology and management that links the effect of human resource practices with the strategy of the company and its business environment (see Guest, 1999, for a review of the theoretical and empirical literature). A number of studies show that those firms

[25] In the organizational behavior literature the hypothesis that certain bundles of human resource practices are superior is known as the configurational approach.

that have a fit between business strategy, structure, the company's external environment and human resource policy and practice have superior performance (Huselid, 1995; Delery and Doty, 1996; Youndt et al., 1996). Hence, the aim and scope of the award system need to be in accord with the strategy and structure of the company for the award system to be effective in promoting organizational performance.[26]

2.3.3 Procedure

Procedures are another factor hindering or enhancing the effect of awards on performance. The importance of procedures for motivation has been addressed in organizational psychology as well as in economics. An early account is equity theory (Adams, 1963, 1965), which rests on the assumption that people are motivated as long as they perceive the situation to be just. Two important forms of justice have been identified as important: distributive and procedural (Thibaut and Walker, 1975; Thibaut and Laurens, 1978). Distributive justice relates to the fairness of a given outcome and procedural justice relates to the fairness of the processes that led to that outcome (Tyler, 1989, 1998). A third form is sometimes discussed and relates to whether the person is treated with concern and consideration during the exchange (overviews of the literature on interactional justice are presented in Greenberg, 1990, 2000). The predictions of these theories have been validated in both the laboratory and the field (Ambrose and Kulik, 1999). In economics, procedural utility

[26] However, there is also evidence that some practices are superior to others irrespective of the context ("best-practice hypothesis"). Pfeffer (1995), for example, lists 16 human resources practices whose positive effects are established. Empirical support is provided in (Huselid, 1995; Delaney and Huselid, 1996; Arthur, 1994; Ichniowski et al., 1997).

has been introduced by Frey et al. (2004).[27] In a recent review, Tyler and Blader (2000) demonstrates that people are more willing to accept decisions when they feel that those decisions are made through decision-making procedures they view as fair. Studies of procedural justice further suggest that people evaluate fairness primarily through criteria like whether there are opportunities to participate, the authorities are neutral, people trust the motives of the authorities, and people are treated with dignity and respect.

This literature has several important insights for awards. The general procedures that govern the award system need to be transparent and fair. This pertains to decisions on the kinds of activities that can earn an award and the range of employees for which the respective award is open. Further, as awards derive their motivating power to a large extent from recognition and honor, management's attitude as indicated by their statements and behavior influence the value of awards. If employees feel that management does not really care about the activities honored or only uses the award system as a cheap incentive device, they will not work. Also, the procedures via which award winners are determined and honored need to be fair and transparent. In particular, the evaluation criteria that lead to a nomination and the determination of the winners should be the same for all employees. Further, the decision-maker should be able to adequately evaluate the performance. Otherwise, the award loses its motivating power because it is considered arbitrary.

An important characteristic of most incentive contracts is the use of subjectivity in evaluating and rewarding employees (Murphy and Cleveland, 1995; Prendergast, 1999). The same is true for awards that involve a subjective element in determining the winners. Hence, the literature that discusses the

[27] Benz and Stutzer (2003) provide evidence on procedural utility in work relationships.

effect of ex post, subjective performance evaluations is directly relevant for understanding the motivating power of awards. The literature on ex post rewards has mainly studied subjective monetary bonuses and concluded that these motivate, because they complement perceived weaknesses in quantitative performance measures and provide employees with an insurance against the downside risks associated with their variable pay as managers can consider more determinants than quantitative output when they determine the bonus (Gibbs et al., 2004). Specifically, subjective bonuses are used to mitigate formula bonus distortions caused by incompleteness, short-term focus, and susceptibility to manipulation. Further, subjective bonuses reduce the risk associated with deterministic, formulaic bonuses by filtering out factors that the individual cannot control. The use of subjectivity also allows evaluators to exploit any additional relevant information that arises during the measurement period to the benefit of both the firm and the employee. The firm can benefit through improved incentive alignment, and the employee can benefit through reduced risk. In effect, subjectivity allows for the recalibration of incentives during or after the period, which can be especially important if there are costs to changing or renegotiating formal bonus contracts (Baker et al., 1988).

At the same time, ex post rewards may be preferable in overcoming multitasking problems because the principal can take into account the agents' performance in all the tasks even if it is impossible to write explicit contract on most tasks (Fehr and Falk, 2002). Among others, Baker et al. (1994) and Baiman and Rajan (1995) show theoretically that in certain circumstances the combined use of objective performance measures (explicit contracts) and

subjective performance measures (implicit contracts)[28] is optimal. Most the positive aspects of subjectively determined financial bonuses also apply to awards. In fact, as will be discussed below in chapter 3, it may be one of the attractive features of awards that they complement an employee's salary and substitute for performance pay in situations in which the latter backfires. However, awards cannot compensate or insure employees for large financial risks associated with their variable salary components due to their typically low monetary value.

In practice, there are certain implementation problems that compromise the theoretically established advantages of subjective performance evaluations. Among other problems, performance appraisals are often a required, but unrewarded managerial task. It is rational for managers to spend no more than the minimal acceptable time and effort needed when evaluating subordinates performance. Moreover, managers bear a disproportionally large share of the nonpecuniary costs associated with performance appraisals because they often have personal relationships with their direct subordinates, making employee complaints and direct conflict with poorly performing employees particularly distasteful. Therefore, managers prefer uniform (centrality bias) and high ratings (leniency bias) to a careful differentiation of employees by performance.[29] The biases cause a suboptimal incentive provision and are

[28] On implicit contract also see the literature on psychological contracts that represents the mutual beliefs, perceptions, and informal obligations between an employer and an employee (Rousseau, 1998, pp. 218f, Frey, 2006, p. 378).

[29] For an overview of these and other biases see Murphy and Cleveland (1995). Murphy (1992) empirically demonstrates biases in subjective performance evaluation and their consequences for incentive provision. He further shows that systems that force managers to deviate from uniform and lenient ratings have important downsides because they induce sabotage and provide little incentives for teamwork and cooperation. Further, it is unlikely that the forced distribution corresponds to the actual distribution of performances in the

not easily remedied (Murphy, 1992).

Awards combine some advantages of subjective rating systems. They are less prone to the described biases because they only require the manager to identify one or few employees as top-performing. This requires less effort on the side of the manager and also has less potential for conflict with subordinates. However, some of the dangers associated with subjective evaluations in general remain like collusion between manager and employees. Also, an effective incentive provision via subjective evaluations requires the supervisors to make fair and unbiased judgments that subordinates accept while not trying to influence the supervisor inappropriately (Gibbs et al., 2004).

This section has presented three mechanisms that have an impact on the degree to which awards influence behavior. First, the cultural background of the employees and country-specific institutional factors are important determinants for the attractiveness of awards as incentives. Second, the business context and the organizational structure of the company need to be considered when designing an award system as incentive systems promote organizational performance best when they fit with the overall business strategy. Third, the procedures involved in determining the award winners play an important role for the motivating power of awards. Only when employees feel that they are treated with respect and when the procedure for granting awards is perceived to be fair and transparent will awards be esteemed.[30]

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workgroup, which leads to demotivation.

[30] Of course there are other factors influencing the effectiveness of awards. Another important factor is the nature of the task to be fostered with the award. Awards may, for example, create procedural utility (Frey et al., 2004) and hence, irrespective of the outcome, pleasure for people engaged in simple, repetitive tasks because the tournament for the award adds an element of fun.[31] On the other hand, awards may work especially well for very com-

After having presented various approaches that provide insight into why awards may have an impact on employee behavior, the next section proceeds with a comparison of awards to other, particularly monetary, incentives.

plex tasks as employees in these tasks have a greater need for role clarification and goal specification (Bandura, 1986; Kluger and DeNisi, 1996; Locke and Latham, 1990a).

Chapter 3

Awards Versus Other Incentives

> *"In many cases, properly run recognition programs can boost awareness of the organization, build employee pride, raise morale and, ultimately, increase productivity. As some of our respondents observed, higher salary is not the best answer. While a larger paycheck is always appreciated, everyone's pride is boosted by a public demonstration of appreciation."*
>
> Magnus (1981)

Before moving on to the empirical evidence regarding the impact of awards on performance, this section provides a conceptual analysis. Awards are contrasted with other incentive instruments such as praise, feedback, promotions and performance pay to gain a deeper understanding of the unique features of these different motivators and their comparative advantages. The issues discussed in this section go beyond what will be tested empirically in chapters 4, 5, and 6 and are still open for future empirical research. This section does not attempt to present an exhaustive discussion of all incentive instruments and their characteristics. Rather, a number of interesting features of awards are raised and it is discussed how these features distinguish awards from other incentive instruments. As there is basically no literature on awards, this section is somewhat tentative and proceeds without many references to existing

research. The findings reported in the previous chapter on tournaments, performance pay and social incentives serve as the foundation for the analysis.

Insights from the interviews with nine human resources managers that were conducted are added to shed light into how practitioners perceive the role and effect of awards. The expert interviews[1] were conducted between 2006 and 2007. As is the case in Bewley (1999) and Agell and Lundborg (1995), the sample of managers is neither representative nor random. However, all of the managers interviewed were either directly in charge of the compensation policy of the company or high enough in the hierarchy to be able to discuss the relevance and meaning of awards as incentives.[2]

This chapter proceeds as follows. First, awards are contrasted with purely monetary rewards to derive a rich characterization of awards and a better understanding of how awards relate to performance-pay, which is currently the most widely used and discussed means of incentivizing work effort. Second, shorter contrasts of awards with three other benchmarks — praise and feedback, promotions and gifts in-kind — are presented to gain a deeper understanding of the distinctive features of awards. Third, implications for human resources policy are exxamined.

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[1] For further information on the method is provided in Kvale (1996), Merton and Kendall (1979), and Bewley (1999).

[2] The companies in the sample cover a broad range of industries to ensure a differentiated set of opinions. The sample consists of a multinational food producing company, a big Swiss construction and real estate firm, an international Swiss-based industrial group, a Swiss credit card service company, three internationally active banks of different sizes, a European financial services company, and the research lab of an international high-tech company. The number of employees accountable to each of the managers ranges from 500 to 6,000.

3.1 Comparing Awards and Monetary Compensation

This section provides a detailed and in-depth comparison of awards with monetary compensation. This highlights the unique features of awards and provides insights into the comparative advantages of the two incentive instruments. Pay-for-performance was chosen as an example because it is currently the most widely discussed motivator in theory as well as practice, and its prevalence is increasing throughout all sectors from corporations to governmental agencies (Pfeffer and Sutton, 2006; Rost and Osterloh, 2009). Money is implicitly assumed to be the most attractive kind of incentive due to its fungibility (e.g., Baker et al., 1988; Waldfogel, 1993). This assumption is, however, not well grounded in empirical evidence because the knowledge about the comparative effectiveness of money and awards as incentives is severely limited. This section draws on existing research on monetary compensation and considers whether similar effects can be expected for awards.

To highlight the differences between awards and monetary compensation, the section discusses money and awards in their pure forms, monetary compensation deprived of any social recognition, and awards with no direct or indirect material benefits. Of course, these pure forms do not exist in reality. Rather, there is considerable interdependence between awards and monetary compensation, a fact which complicates the discussion of either instrument in isolation. Income, for example, depends directly on performance, because of variable salary components, and indirectly, because successful employees have higher chances of promotions, pay raises or beneficial outside offers. At the same time, income may also rise due to the receipt of an award. Awards in turn increase income directly and indirectly. They directly increase income when they come with a monetary bonus. They indirectly increase income

when they help to build up a reputation and make the individual's abilities known to a broader set of persons both within and outside the company. This in turn may improve her professional network and result in job offers. Social recognition, on the other hand, may be generated by good performance, by a high salary, and by awards. Sometimes receiving a bonus for good performance may also provide social recognition similar to receiving an award. This is, for instance, implicit in the expression "to be awarded money."[3] Further, it has been argued that the sizes of bonus payments are well known among colleagues even though they are not officially disclosed and that they present a source of intra-organizational prestige (e.g., Bewley, 1999, p. 27).

The preceding two points make clear that the differences between monetary compensation and awards are far from simple and clear-cut. However, a comparison of the two instruments in their pure forms is valuable because management needs to decide where to place any new incentive on the continuum between pure social recognition and pure monetary payments.[4] Knowledge on the advantages and dangers of the two extreme types is therefore valuable.

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[3] Psychologists even argue that the primary motivating factor that any effective compensation program provides is the psychological effect on the individual and that this also holds for monetary bonuses, where "it is not the material value of the reward, but the boost in self-esteem that public recognition with monetary compensation afford" (Dawson and Dawson, 1991).

[4] One needs to differentiate between four different kinds of monetary compensation: 1) fixed salary, 2) variable, contractually specified monetary bonuses based on company performance, and 3) variable, contractually specified monetary bonuses based on individual performance, 4) variable, discrete monetary bonuses. The focus in this section is on 3) and 4) as these are comparable to awards in their aim of promoting certain activities.

3.1.1 Differences in the applicability of awards and monetary compensation

This section discusses external constraints on the applicability of the two instruments that have to be taken into account when deciding on a new incentive.

Extent of control over the instruments

The scope for implementing pay-for-performance and other monetary incentive schemes may be restricted due to external factors such as laws, regulations and union contracts prohibiting certain kinds of monetary incentives and pay differentiation. No such laws and regulations exist for corporate awards and there are also no legal remedies available for individuals who feel treated unfairly or discriminated against by their employer with respect to awards. To eliminate the danger of legal complaints or negative impacts due to envy, bonuses are awarded on the basis of clearly specifiable quantitative performance measures. In fact, they are often perceived as a fixed part of wages by the employees, as they are often awarded on a contingent basis and with little discretion (see Bandura, 1986). According to the managers interviewed, monetary compensation, including performance bonuses, does not have any incentive effect at all: it is necessary; but it does not motivate. In fact, companies in industries in which bonuses are common are almost obligated to use them, and the staff considers them a standard part of their salary because the variable monetary rewards also follow contractually specified rules.[5] Em-

[5] Related is the finding in the practitioner literature that monetary rewards do not sustainably motivate as aspiration levels increase with each salary increase and as economic incentives become rights rather than rewards. According to Peter Drucker, who is widely considered

ployees mostly expect the bonus to be at least as high as in the preceding year. When the bonus is lower, they are disappointed and their motivation is reduced. If the bonus is approximately the same amount as the previous year's bonus, expectations are met and there is little impact on behavior. Motivation is thought to increase only when the bonus unexpectedly exceeds the previous one by a substantial amount. However, the managers agree that this is rarely the case.

Thus, awards can be used spontaneously, while monetary bonuses cannot. This is relevant here because spontaneity is considered to an important factor for reward systems to sustainably motivate employees.[6] Awards are typically not fully expected because not everyone gets them and because of the management's discretion in determining the winners. The managers perceive that awards motivate to a large extent exactly because they are out of the ordinary and highly symbolic. One manager emphasized in the interview that awards are about spontaneity and surprise, whereas bonuses are calculable. Therefore, awards are sustainable motivators.
Hence, awards may serve as important complements of monetary payment schemes as they can be used more flexibly and are subject to fewer restrictions.

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to be the father of "modern management", "Merit raises are always introduced as rewards for exceptional performance. In no time at all they become a right. To deny a merit raise or to grant only a small one becomes punishment. The increasing demand for material rewards is rapidly destroying their usefulness as incentives as managerial tools" (Nelson, 1996).

[6] This is in line with research that suggests that rewards only motivate when they are not fully anticipated. Schultz (2006), for example, summarizes the neurophysiological literature on rewards and concludes that only rewards that are not fully predicted contribute to learning.

Ideological Restrictions

Apart from legal and institutional constraints, culture, ideology and norms are decisive factors for the applicability of incentive instruments. There are certain sectors and situations in which money or awards may be deemed unacceptable. While the scientific literature does not directly address this issue in the workplace, other situations are investigated that demonstrate that people have certain ideas about when money and when social incentives should be used. One example is gift giving for which a number of studies have shown that money is considered to be inappropriate (e.g., Webley et al., 1983; Offer, 1997). In the corporate sector, monetary payments are generally accepted as a means of exchange. Nevertheless, monetary payments are less acceptable for some tasks (e.g., Wiersma, 1992, shows that people are unwilling to exchange voluntary, personal activities, for money). At the same time, the reverse also holds, and there are situations in which monetary compensation represents the appropriate means of compensation, such as compensating employees for hours of overtime or for other activities directly relevant for company profits.

Such implicit or explicit remuneration norms are not fixed, but may change over time. Consider academia, which has for a long time been taken to be a "Republic of Science" with its own values and rules that are different from market mechanisms (Polanyi, 1962; Merton, 1973). Recently, the ideological system in academia has been changing and pay-for-performance programs have been increasingly used and accepted. An extreme example is the Vienna University of Economics and Business Administration, which pays €1000 for a paper published in an 'A journal' and €3000 for a paper published in an 'A+ journal'.[7] Moreover, awards can also affect compensation norms (also

[7] See http://bach.wu-wien.ac.at/bachapp/cgi-bin/fides/fides.aspx?journal=true.

see section 2.2 on the behavioral relevance of norms and the potential effect of awards on norms).

Hence, managers need to be aware of such norms and informal rules about what is considered an appropriate kind of incentive in a certain situation when designing rewards. Factors that have a bearing on this such as culture or the nature of the rewarded task have been discussed in 2.3.

Financial feasibility

Pay-for-performance and award schemes differ in the timing and kinds of cost involved in their implementation and operation. Variable pay has direct monetary costs that occur regularly according to a fixed schedule. Further, it requires a good performance monitoring system according to which performance and thereby the payments are determined. The set-up costs for such a monitoring system may vary depending on the nature of the task. The costs associated with an award system are typically less clear-cut and transparent. The award itself often costs little in terms of the material used. Some costs arise from the award ceremony and from the selection and screening process necessary when determining the winners. These costs are not negligible. The Van Cliburn International Piano Competition, a renowned music competition, for example, which presents a cash award of $20,000 to its first-prize winner, costs more than $3 million to run (English, 2004, pp. 112ff). In a corporate setting, the costs are probably lower because performance is monitored more or less independently of the award, and supervisors can typically judge who deserves awards.

There are also differences in the financial benefits from employing awards or money as incentives. Because monetary benefits are considered to be more

powerful extrinsic incentives, it is likely a bonus of a typical size causes a larger increase in the activity targeted than a typical award. Awards, by comparison, may bring additional benefits to the company that may be hard to quantify in dollars or only become effective in the long run. Examples are the development of a group identity, a change in the organizational climate and the establishment of role models.

Due to the differences in the nature and timing of the associated costs and benefits, external factors such as the availability of financial means or the feasibility and costs of a monitoring system play decisive roles in deciding between awards and performance pay as incentives. If an organization, for example, wants to install a new incentive and has limited funds but free human resource manpower, awards may be more attractive than pay-for-performance schemes. On the other hand, if it is important that certain activities are quickly increased and financial benefits and expenditures are highly predictable, variable pay such as piece rates, may be preferable to awards.

Performance measurement

As was mentioned above, monetary compensation has to be specified contractually ex ante, i.e. before the performance of the employee.[8] Typically, the base salary is fixed in the employment contract, and the rules according to which bonuses are determined are specified. Hence, performance bonuses are suitable incentives when goals can be clearly specified ex ante and when the corresponding performance is easy to identify and to measure. Performance

[8] Theoretically, monetary bonuses may also be determined subjectively ex post. However, monetary payments are typically subject to a strict set of rules, and employees may even sue employers when they disagree with the stipulated amount. Therefore, most bonuses are determined according to a clear and transparent set of quantifiable performance measures.

bonuses frequently backfire when the goals are vague, when performance can only be measured with considerable error or in a limited set of dimensions of a complex job. In these cases, financial incentives cannot be conditioned adequately on performance. If an employee feels that the exact amount of a monetary reward does not correspond to her achievement, she is disappointed and her motivation may falter. Further, effort may be distorted, such as when employees only focus on the specified performance dimensions and neglect other important aspects of the task (see Holmstrom and Milgrom, 1991 or Kaarboe and Olsen, 2006 on multi-tasking).

Typically, the economics and management literature has focused on simple and clearly specifiable tasks, despite the prevalence of complex jobs with vague tasks.[9] The few authors who have addressed incentives for complex jobs either advocate the use of fixed wages, i.e. the abandonment of explicit extrinsic incentives and the reliance on intrinsic motivation (e.g., Holmstrom and Milgrom, 1991; Frey and Osterloh, 2005) or they call for a subjective overall performance evaluation (see section 2.3.3, specifically Baker et al., 1988, Hayes and Schaefer, 2000, and Murphy and Oyer, 2003). However, it is typically not specified how this should be done. Holmstrom and Milgrom (1994) argue for a combination of different incentive systems to counterbalance potentially distorting effects of one system alone. Awards are extrinsic, but non-monetary motivators and lie between intrinsic and extrinsic motivators. They are often exactly suited to the situations described before because they are typically handed out according to a set of vague criteria, thus giving managers leeway to globally assess performance ex post and to take into account inputs such as work ethics.

[9] This has been criticized, for instance, by Prendergast (1999).

Awards do not require an exact evaluation of performance. An approximate knowledge of overall performance suffices because the award itself provides general recognition rather than recognition counted in exact sums of dollars or euros. Hence, awards may be substitutes for performance pay when the tasks are of a vague and complex nature and hard to measure. Alternatively, awards may be important complements to performance pay in these situations in case the combined use of the two instruments does not lead to the same kinds of distortions that would be caused by performance pay alone.[10] The same holds when there is uncertainty ex ante with respect to which behaviors suit the company best. Then, the company deliberately wants to stipulate vague performance criteria, such as "good customer service", and leave open which specific kinds of behavior qualify. In the interviews, managers stated that awards are used when management wants to keep performance criteria deliberately vague. In all but one company, which uses awards as tournament prizes based on sales figures, awards are handed out according to a set of broad criteria so that management retains leeway in evaluating performance ex post. Related is the finding that all managers agree that salaries, including performance bonuses, compensate for "normal" performance and that awards rather than monetary forms of compensation should be used to reward extraordinary performances and activities. Such activities tend to be those that cannot be contractually fixed. That some substitution is possible

[10] Along similar lines, Bruggen and Moers (2007) also hypothesize that non-monetary incentives play a crucial role in multi-tasking settings. Their experimental results show that, while financial incentives promote higher levels of effort, congruent social incentives, i.e. social and ethical norms promote a less distorted effort allocation. However, in their set-up, the principal cannot influence the social incentives that guide behavior. Awards can be understood as social incentives. However, in contrast to norms, they can be used as instruments that influence behavior both directly, because awards are desired by individual employees, and indirectly, via their impact on norms in the workplace.

between status/honor and monetary compensation has already been observed by Smith (1937 / 1776, p. 100) stating that "honor makes a great part of the reward in all honorable professions. In point of pecuniary gain, all things considered, they are generally under compensated." At the same time, Auriol and Renault (2008) counter that while recognition is a key feature of work incentives even when output is easily measurable, it would be misleading to view recognition as a cheap substitute for money. A common theme in organization theory is that there are some costs associated with the differential treatment of people performing similar tasks. Recognition has a cost because it is valued in relative terms; for every award winner there are a number of losers. Another constraint that an employer faces when deciding on an allocation of social status is that the allocation should be perceived as legitimate because it will be without effect or even counterproductive otherwise.

3.1.2 Effectiveness of awards and monetary compensation as incentive instruments

This section compares five ways in which the two instruments, money and awards, differ in their effectiveness in incentivizing effort.

Marginal effect

Recent empirical research on happiness (a reasonably good empirical proxy for utility) has shown that the marginal utility of money is, indeed, decreasing exactly in the way postulated by standard economic theory. An increase in income raises the happiness of poor people considerably, while the effect on people with higher income is relatively small (see Frey and Stutzer, 2002a,b; Layard, 2005; Deaton, 2007). There is no evidence on how the marginal ben-

efit of awards changes with the number of awards received. However, there are some models on status incentives (e.g., Auriol and Renault, 2008) that assume decreasing marginal benefits and a positive cross-elasticity between income and status (psychological need theories also point in the same direction see section 2.2.2). It seems plausible to make the same assumptions for awards. When deciding between money and awards it is therefore important to know whether the marginal utility of money or awards is decreasing more quickly. The current state of research does not provide an answer to this question.

Another effect to be considered is the induced change in utility over time. According to the adaptation explanation of the "Easterlin Paradox" (Easterlin, 1974, 2005),[11] an increase in income first raises utility, but the effect on utility wears off over time. After a year, between two thirds and three quarters of the utility increase have evaporated (Frey and Stutzer, 2006). Over time, increases in the per capita income of a country therefore go along with a (nearly) constant happiness level. Again, there is no evidence for awards. However, one may once more draw on the status literature, which has shown that people are much slower to adapt to higher status than to higher income (Di Tella and MacCulloch, 2006). Therefore, an increase in status leads to a more sustained increase in utility than an increase in income. Because awards and status are related, one might therefore infer that awards also lead to a more sustained increase in utility than an increase in income.

[11] The Easterlin Paradox describes the empirical observation that while individuals in richer countries are happier than those in poorer countries and wealthy individuals are happy than poor individuals in the same country, average happiness in a country does not increase with rises in the country's income level over time. Apart from the adaptation hypothesis discussed above, a second popular explanation for the paradox is that relative rather than absolute income determines happiness.

Value to the recipient

Money is valuable to all individuals, because it is the most fungible of all goods, an insight that has long been central to economic thinking.[12] The value of monetary incentives to recipients is unambiguous and changes in the value of money are determined by the current rate of inflation. Hence, it is exogenous to both the award-giving institution and the recipients. The transfer of money to the recipient is therefore always a clear and credible signal of appreciation and recognition because money is a scarce resource. This is supported in interviews as the managers agree that awards are often associated with a monetary bonus, not because the bonus per se is important for motivation, but because it credibly signals the importance of the activity to the company and because money is the dimension in which the company profits from their employees' efforts. The desirability of awards, in comparison, is endogenous and depends on a number of different factors such as its scarcity and the prestige of the organization or person bestowing the award.

Awards mainly consist of a "piece of ribbon" or a paper certificate of no significant material value. There is, therefore, no apparent constraint when it comes to handing out awards. This can easily result in award inflation, as has indeed happened in some countries (examples being the Soviet Union and the German Democratic Republic) where so many orders, medals, and decorations were handed out that they lost much of their value. As the value of an award critically depends on its scarcity, and because the scarcity of awards is not exogenously fixed, the giver must resort to some credible self-binding mechanism to maintain its value. One such mechanism is to combine the award with money. This is an effective constraint as funds are limited. A

[12] See, e.g., Baker et al. (1988), or Waldfogel (1993) on the comparison with gifts.

second mechanism is a formal restriction on the number of awards handed out. Such a restriction can take various forms. One can restrict the number of awards by having a fixed number in circulation. This procedure holds, for example, for some state orders in Great Britain such as the *Most Noble Order of the Garter* or the *Most Ancient and Noble Order of the Thistle*, which are limited to 25 and 16 bearers, respectively. However, such restrictions are only rarely used in companies.[13]

Another possibility is to hand out awards only at fixed intervals and only to a fixed number of persons. That is the case for *Employee of the Month* titles, which by definition are handed out on a monthly basis to one individual a time. Restricting the number of possible recipients does not always work because the award-giving institution has a short-term incentive to increase the number of award recipients at the expense of the award's reputation and value in the future.[14] Outside the corporate sector, this has, for instance, happened in the case of the French *Légion d'honneur*. The number of recipients is allegedly limited (1,250 Commanders and 10,000 Officers), but has been awarded to many more people (3,626 Commanders and 22,401 Officers; see Frey, 2005). In the corporate sector, restrictions in the number of awards are often implicit and known by custom.

The value, and hence effectiveness of awards also depends on the prestige of the organization, which can partly be influenced by the recipient. An employee's effort contributes to company success, which in turn influences the

[13] An exception is IBM Research, which has two categories of awards each with a fixed number of recipients: the *IBM Academy* with 500 members worldwide and the *IBM Fellowship* program with 40 members worldwide.

[14] The managers added that the monetary component of awards should be kept small, so that the award does not become comparable to performance pay, which tends to create envy among colleagues or feelings of entitlement.

reputation and prestige of the organization and hence, the value of the award. This channel provides an incentive for award winners to put in additional effort even after the award is presented because she can increase the value of the received honor with her performance.

Apart from the factors mentioned, procedures are more important for the value of awards than for monetary rewards that retain their consumption value irrespective of how the bonus was calculated. Specifically, employees need to trust the supervisors that only the most deserving employees receive awards. Only then do awards have value as compensation and as a signal of outstanding performance, which is a prerequisite for the discussed positive impact on status, recognition and self-image (see chapter 2).

The value of awards versus monetary compensation to the recipient also depends on other, individual-specific, factors such as the hierarchical position of the employee in the company. One can argue that awards are more effective for employees in lower positions in the firm as they have a greater need for recognition in the form of awards. Persons high in the company hierarchy often receive recognition by outsiders in the form of job offers from headhunters, invitations to give talks, or occupational prestige associated with their job in general. They may also reap all social recognition for successful projects. Additionally, highly ranked prestige hierarchies outside the firm, such as professional associations or the media, provide awards to employees in important positions (e.g., the title *Manager of the Month* by the business press). As the need for social recognition by higher-level employees is met in these different ways, they exhibit a smaller interest in awards from the company itself.

The preceding arguments may seem to contradict the argument that awards

should work particularly well for those individuals with a low marginal utility from monetary payments. Low marginal utility of income applies for instance to employees in higher hierarchical positions of the organization as they earn higher salaries. However, the low marginal utility from monetary compensation for persons in higher positions in the organization is not sufficient to infer that awards will work better for them. Rather, the preceding discussion suggests that the marginal utility of monetary payments and of social recognition may be positively correlated within organizations. Hence, both money and awards work better for individuals low in the company hierarchy.

3.1.3 Publicity

In section 2.1.3 it has been established that signals of motivation and ability are highly valued in many settings. Monetary compensation, in contrast, is not typically publicized. Receiving a large year-end bonus for outstanding sales performance, for example, helps little, if at all, in signaling motivation and ability to outsiders. As was discussed, awards serve the signaling function well. An award is typically given at a public ceremony, and it is clearly articulated why the recipient won the award. Hence, a clear signal is given to insiders. The signaling value of an award is increased because it extents to outsider as it is generally acceptable to display award certificates in one's home or office and to list awards on one's C.V.[15] Also, the award-winning behaviors are typically mentioned on the certificate, which increases the in-

[15] As was discussed in the literature section, the company will only implement awards with a large signal value to outsiders if the overall benefit of the award systems outweighs the risks associated with employees demanding a higher wage or even leaving the company because of outside job offers. One manager interviewed explicitly addressed the downsides of publicity by arguing that awards may improve an employee's outside option.

formation contained in the signal to outsiders.

Award winners are publicized in all of the companies surveyed via a ceremony, a presentation of the recipients on the local area network, or an article in the company newsletter. This publication of the winners and the reasons for their selection constitutes an important difference between awards and other kinds of incentives. The visibility of the winners allows awards to generate social recognition exceeding that generated by bonuses, which are typically private, or praise, which is only observed by the colleagues present. This is confirmed by the managers who emphasized that awards are better than other motivators in bringing esteem and honor to the winners via, for instance, public congratulations or a certificate. According to them, recognition by fellow employees is the most powerful motivational drive and awards directly address this need. According to all managers, visible symbols such as a certificate or a trophy are an important feature of awards that distinguish them from praise as well as from monetary payments. The publicity also extends the circle of people from which the recipient may receive recognition to include colleagues the recipient does not know personally. Further, publicity also fosters the creation of role models within the company. By putting a successful employee into the spotlight, the company can highlight successful and valuable kinds of behavior.

Of course, awards also motivate when they are not public, because they provide performance feedback and recognition by the superior. However, the net effect of such awards should be smaller than the one of public awards, as long as there is no reason to assume that the potentially negative effect of publicity on non-recipients due to envy or disappointment is substantial.

Monetary compensation or performance bonuses, on the other hand, are

not published, nor is information about them made available upon request in all the companies surveyed. Money may be more effective in inducing performance increases with respect to a targeted activity, but it exhibits fewer positive side effects in the form of information dissemination and social recognition. Hence, the desirability of publicity is another critical factor in deciding between awards and monetary compensation.

Intrinsic motivation

In section 2.2.4 it was explained why monetary compensation may, under certain circumstances, reduce effort and performance. Detrimental effects of performance pay are, for instance, likely when performance measurement is difficult or tasks are vague. This section argues that there are major differences between performance pay and awards with respect to their impact on intrinsic motivation and that awards are less likely than performance pay to decrease intrinsic motivation. On the contrary, they may even foster it.

The monitoring necessary to make performance pay schemes effective is one cause for their negative impact on intrinsic motivation, as employees may perceive it as controlling. Awards, on the other hand, can do without strict performance measurements, as they only require a broad assessment of performance and are therefore less likely to be perceived as controlling. In contrast, because the intrinsic motivation and dedication of the winner are often emphasized in the award speech, intrinsic motivation may even be fostered.[16] Further, weak individual material incentives are shown to create an

[16] This is in line with Cognitive Evaluation Theory that suggests that feedback from an external source is expected to lower intrinsic motivation if individuals perceive it as controlling, which is likely for performance pay requiring exact measurements, but not if they perceive it as competence feedback, which is likely for awards (Deci and Ryan, 1980).

impression of disrespect and should only be used when they are sufficiently strong. Symbolic rewards, such as stars or other materially worthless distinctions may be preferable and can be used to indicate which behaviors are deemed to be desirable (Ellingsen and Johannesson, 2008). One manager in the study emphasized that social incentives should be used to reward activities that require a high degree of intrinsic motivation because those activities would be viewed as less enjoyable if they were associated with purely monetary rewards. However, it is, of course, true that well administered pay-for-performance programs may avoid the crowding out of intrinsic motivation,[17] just as badly administered award systems may do.

Awards and money also differ with respect to their impact on a person's self-image, which was discussed in section 2.2.3. Recall that this literature rests on the premise that individuals have imperfect knowledge about their motivation or their ability and infer this information from their behavior or external interventions. When individuals are given money for contributing to corporate public goods or for helping their colleagues, they may infer from this that they did so mainly to earn money and not because they were interested in it or genuinely cared about helping their colleagues. In the presence of external incentives, the activity may therefore be reduced because engaging in it does not result in an unambiguous, positive signal of one's genuine altruistic motivations. Award winners are determined subjectively according to a set of vague criteria. Hence, awards may be less harmful to the signaling value of pro-social activities as monetary incentives because there is no clear, completely predictable relationship between behavior and awards. Further,

[17] Wiley (1997, p. 272) describes evidence that monetary rewards increase intrinsic motivation when employees consider good wages to be solid feedback concerning their work as well as a reward for their ability and competence.

receiving an award may boost self-confidence, which in turn increases motivation and effort (see section 2.2.3 on the relationship between self-image and performance).

Hence, awards can serve as substitutes for monetary incentives when the latter have detrimental effects on performance. Monetary payments tend to lower effort, when they crowd out the intrinsic motivation to engage in a task or negatively affect an agent's self-image.[18]

Creation of loyalty to the giver

As was discussed above (see section 2.2.3 on identity), awards and the associated ceremonies have the potential to shape employees' identities as well as create in-groups, both of which may result in loyalty towards the company. At the same time, public recognition of the recipient by the organization may create an emotional as well as a strategic bond due to the warm feelings of thankfulness for the honor received[19] and the connection between the recipient and the award-giving institution that is established with the public acceptance of an award. In fact, the recipient would devalue her own award if she spoke badly of the giver. A bond of loyalty is therefore established between the giver and the recipient. While the strength of this bond varies depending on the specific award and the specific recipient, it is most likely stronger

[18] That some substitution is possible between status/honor and monetary compensation has already been observed by Smith (1937 / 1776, p. 100) stating that "honor makes a great part of the reward in all honorable professions. In point of pecuniary gain, all things considered, they are generally under compensated."

[19] The managers stated that awards cause a stronger emotional reaction than other motivators. Monetary compensation was considered to be devoid of any emotional element ("one simply is not emotionally touched when receiving one's salary"). Praise, by comparison, is thought to cause an emotional reaction.

for awards than for monetary payments. In fact, monetary compensation typically does not induce any loyalty and can even be used as justification to work for a principal or an organization that one publicly denounces — "I only did it because of the money." Experimental research suggests that monetary payments induce a self-sufficient orientation in which people prefer to be free of dependency and dependents, i.e. they feel less obliged towards the institution responsible for the payment (Vohs et al., 2006, p. 1154). The gesture of payment relegates the relationship to the purely economic sphere, in which characteristics such as loyalty play no role (see also Gneezy and Rustichini, 2000a). Hence, considerations of loyalty also have an impact on the decision between awards and money as incentives.

In the interviews, seven of the nine managers said that awards induce loyalty because the recognition induces feelings of connectedness to and solidarity with the company. One manager limited his statement to the more important awards. Overall, there was general agreement that awards do affect organizational commitment, a weaker form of loyalty. One manager emphasized that awards and monetary compensation lead to differences in orientation of the employees. Awards cause loyalty and identification and put values and value-oriented behaviors into the focus of attention. Performance-pay schemes, on the other hand, induce employees to be oriented towards increasing their monetary payoff. Employees typically compare their bonus with those of colleagues and also with employees at comparable companies and become disgruntled if their bonuses are smaller. Whether behavior is in line with ethical standards or the values of the organization is not the center of attention. However, it is unlikely that differences in award schemes between companies cause envy and dissatisfaction because awards are more difficult

to compare and because people typically do not compare their company with other companies in terms of the award systems installed.

3.2 Contrasting Awards with Praise, Promotions, and Non-monetary Gifts

Of course monetary forms of compensation are not the only interesting benchmark to compare awards with. This section therefore contrasts awards with three further human resources instruments according to a selective but informative set of factors. Praise and feedback, promotions and gifts in-kind are considered because these are the most widely used human resources instruments apart from monetary rewards.[20]

3.2.1 Praise

Relative to praise[21] and feedback, the procedures associated with awards are more formal. Typically, there is also a limit to the number of awards handed out in total or per period and the associated monetary bonus additionally forestalls an inflationary use of awards. Moreover, awards are signed or even handed over by a higher-level manager, often even the CEO. Her high opportunity costs also ensure the credibility of the recognition expressed with the award. These and other features lend awards an official character that differentiates them from more informal interventions such as praise and feedback and make an individual award more valuable than a praise or a positive

[20] Fringe benefits are not discussed explicitly because they are highly regulated and form part of the employment contract. Thus, they are not used as discrete rewards for exceptional performance, which is the focus here.

[21] Praise refers to a supervisor verbally telling an employee that he or she did a good job.

feedback.

At the same time, there are no immediate material costs associated with informal praise or feedback from one's immediate supervisor. Much of the effect of these incentives therefore hinges on the personal relationship between the manager and the employee. Specifically, the effect of praise and feedback depends on the ability of the supervisor to provide feedback, the employees' trust in the sincerity of the praise, and on the employees' assessment of the supervisor's subjective criteria for deciding whom to praise. Hence, the effect of these informal incentives on performance depends to a large extent on the individual supervisor and is hard to systematically administer for human resources managers.

The official procedures render awards much less person-specific. An award scheme applies to more employees than there are members of a single workgroup managed by an individual supervisor, which alleviates problems associated with procedural justice. Awards and praise should, however, not be considered as substitutes because the nature of recognition differs. While feedback and praise provide instantaneous recognition for a job well done and are of a personal nature, awards recognize longer-term dedication and achievement and are more formal, i.e. they present recognition by the company. In addition, awards can partly compensate for the lack of recognition in workgroups in which the direct supervisor has problems to communicate recognition.

3.2.2 Promotions

While award systems and promotions share an element of competition, the aims of the two incentive systems are different. Promotions have organiza-

tional consequences as they change the hierarchical position and job content of selected employees. Awards, on the other hand, are typically unrelated to promotion decisions, as was confirmed in the interviews with human resource managers. For this reason, the criteria for selecting award winners and for choosing employees for promotion differ in essential aspects. Promotion decisions are typically based on performance in core business areas. Awards, in contrast, target a larger variety of behaviors. They often promote soft activities or organizational citizenship behaviors, such as volunteering to substitute for sick colleagues or helping new employees get settled. Such behaviors are typically not feasible for making promotion decisions because they reveal motivation but provide little information about skill, which are important for promotions. Since awards are often granted for activities where the standard deviation of performance is high, and given that awards typically have a larger number of recipients than there are opportunities for promotions, awards are attainable for a larger number of employees. Hence, there is less of a danger that individuals resign or even resort to sabotage because they feel excluded from an incentive scheme they value (this effect has been extensively discussed in the literature on tournaments, see section 2.1.2 on an overview of this literature). Specifically, awards may be attainable for employees who are not eligible for promotions or high performance bonuses.

Award systems are also more differentiated than promotion systems. There are, for example, awards for cooperation, innovation and skill enhancements. This selection already shows that awards can be and are created as the need arises. Promotion systems on the other hand are fixed, mostly depending on the organizational structure, with little discretionary room for management to change the number of hierarchies other than via the creation of arbitrary

titles, which is unlikely to motivate anyone.

The preceding discussion shows that awards work and that they may serve as complements to promotions. While promotions have to be based on performance in core business activities and have to take the fit between the promoted individual and the new job into account, awards can focus on many different criteria.

3.2.3 Non-monetary gifts (gifts in-kind)

Another interesting contrast is between awards and gifts in-kind as rewards for special achievements. Awards via the trophy and in-kind gifts share many features, including their value as sustainable reminders of good performance. In comparison to monetary bonuses, awards and gifts in-kind likely cause greater reciprocal reactions (see section 2.2). Awards, however, are more durable than gifts, which are typically used or consumed. Further, awards are more fungible in the sense that the associated social recognition and bonus are more likely coincide with the needs of the recipients than a specific gift. Moreover, awards are better signals to professional outsiders as they can be mentioned in the C.V. and as the certificate provides information on the award-winning behaviors. Of course, gifts-in-kind also have advantages. Among others, they more easily transfer the intra-organizational recognition to the home setting, as family and friends typically take more note of a new TV than a certificate in the office. If chosen correctly, individuals may value the gift beyond the monetary equivalent (in addition to the recognition and status provided with the presentation). This applies to goods that are highly valued but not bought, because the individual would not be able to justify the purchase of such a luxury good to himself or the family (a discussion of this

justification effect is presented in Jeffrey, 2007). As awards and gifts-in-kind each have advantages, circumstances determine which of the two should be used in a specific situation.

3.3 Implications for HR–Policy

The comparison of awards with other incentives highlighted some specific features of awards. Moreover, the section presented a number of contextual factors, such as the norms concerning appropriate forms of compensation, the legal and institutional environment and the type of activity to be rewarded, which influence the preferability of the different instruments. This section draws on the findings discussed above to derive specific implications for human resources management.

3.3.1 Awards are a distinct kind of incentive

To begin, an important difference between awards and other incentives are that awards are motivators along different dimensions. This means that they address a number of different needs at the same time, for instance, the need for social approval, for a positive self-image and for a signal for ability. One consequence is that awards appeal to employees with very heterogeneous needs, offering a bonus to those for whom material needs are most salient, feedback to those that have a need to know how they perform relative to others and relative to their own performance standard. Of course, other motivators also address more than a single need. However, the bundle character is more pronounced and explicit in the case of awards. Informal positive feedback, for example, may also raise status if others learn about the praise. Neverthe-

less, the impact on status is typically only an unintended side effect. Awards may also exhibit unique properties exactly because of their bundle character, i.e. effects that go beyond what has been demonstrated for the individual motivators that comprise an award (evidence on synergistic effects of incentives was discussed in section 2.3.2). So far, no study has investigated the synergistic properties of the specific combinations present in awards. Second, awards reward performance that cannot be contracted such as having a goof work ethic. Further, awards can be used to incentivize activities that cannot be targeted with other incentives, like promotions for work output. Third, the performance evaluation associated with awards is more formal than the one for praise and instantaneous feedback, and it relies on ex-post assessments according to vague criteria that are typically different from those of performance pay schemes. Therefore, the performance evaluation for awards may be perceived as less controlling than the one associated with variable monetary compensation so that awards are less likely to crowd out the intrinsic motivation. Fourth, awards provide formal recognition to employees that may not be eligible for other formal rewards such as high bonuses or promotions. Fifth, awards are more durable than gifts and are superior in terms of their signaling value due to the certificate and publicity. Overall, depending on the task at hand and the availability of other rewards, awards can either complement or substitute for other incentive types. The established differences can serve as criteria for human resources managers on deciding which kind of incentives to implement in a certain situation.

3.3.2 When to use money and when to use awards

The deeper comparison between awards and monetary forms of compensation revealed some substantial differences in the applicability and effectiveness of the two instruments that have consequences for human resources strategy. The main strengths of money as an incentive are its fungibility (consumption value), and the fact that it more easily serves as a credible signal of appreciation. Its main weaknesses are the often limited applicability due to political, social, and economic restrictions, and the problems entailed in the necessary performance measurement. The main strengths of awards are their wide applicability (due to their discretionary nature), their effectiveness in terms of their signaling capacity, motivational crowding-in, and the creation of loyalty. The main weakness of awards is the difficulty of the award-givers to commit themselves to keeping the number of awards scarce and therefore valuable. Further, the discretionary nature of awards implies that they are only taken seriously if there is considerable trust in the selection procedure. Although money may, in principle, bring recognition and status, awards are more effective in doing so due to the greater role of publicity.

It follows that money is a valuable instrument to promote effort if the price system is politically and socially accepted, if the performance desired is well specified, if incomes are low (and the marginal utility of money high), if there is little need for signaling, and if output does not depend greatly on intrinsic motivation. Awards are the preferred instrument in the opposite cases.

It might seem obvious that the advantages of each instrument could be maximized and the disadvantages minimized by combining money and awards in a suitable way. This is done in many cases. The *IBM Innovation Award*, for example, comes with a considerable sum of money. Indeed, connecting a

prize with a substantial monetary bonus might well be a good strategy for a newly established prize in order to signal the seriousness of the intention to honor good performance and to make it prominent (prizes with higher monetary amounts may receive more attention by employees). The danger of combining money and awards is that both instruments lose their advantages, yet the disadvantages remain. Many prizes do not even publicize the amount of money that goes with them, or they publicly downplay the role of the compensation. As soon as the monetary component becomes too salient, awards may, like performance pay, lead to motivational crowding-out, destroy self-signaling, and lead to envy and sabotage.

As was discussed above, money and awards do not exist in the "pure" forms discussed in this section. Rather, even awards without money attached may have indirect monetary consequences by raising future income, and receiving money may, under some conditions, bring social recognition. Therefore, managers typically do not have to make an "either-or" decision, but can choose a combination of the two instruments that suits their specific situation best. Relevant factors to be considered have been identified above. This is in line with the finding in the interviews that all managers agree that awards cannot substitute for adequate financial remuneration. Hence, awards and monetary compensation, overall, are viewed as complementing each other. In general, the managers argued that one should not ask about the particular type of reward to be used for certain kinds of behaviors. Rather the choice of the incentive system needs to be aligned with the overall strategy of the company. In the view of one manager, non-monetary incentives such as praise and awards tend to focus on values and relationships, whereas purely monetary bonuses typically focus on measurable performance outcomes. If

a company wants to move from an incentive system based on monetary rewards to a system of praise and awards, management needs to establish a new set of evaluation criteria. Further, awards will only motivate if management provides an example, for instance when managers exhibit behavior guided by those values and rules that are used for evaluating the employees. Otherwise, employees will consider a move from monetary incentives to praise as a mere cost-saving measure, especially if managers continue to be compensated with bonuses. One manager stressed that one cannot discuss the impact of a particular award in isolation; rather awards always need to be embedded in an entire reward system. Some awards should be associated with substantial monetary bonuses, others with a smaller bonus, and still others with no monetary payout at all. It is important that there is a broad variety and a small number of awards so that there is still an element of surprise for the winner.

This thesis provides a first systematic assessment of awards. The chapters presenting empirical studies demonstrate that awards have a significant ex ante incentive effect as well as a sizeable ex post effect on performance. Of course, many of issues raised in this section cannot be verified with an analysis of these "main effects". Hence, a careful empirical investigation of the comparative effectiveness of awards and other incentives remains open for future research.

Chapter 4

The Incentive Effect of Awards — A Field Experiment

4.1 Introduction

This chapter reports the results of a field experiment that assesses the incentive effect of non-material awards (i.e. rewards with no impact on current or future economic well-being) on performance in a real-life work situation. Hence, it provides empirical relevance of the relevance of awards that is so far missing in the literature.
The following section describes the experimental design. Section 4.3 presents and discusses the experimental results and section 4.4 concludes.

4.2 Experimental Design

The field experiment was conducted in collaboration with the Swiss office of the international NGO *The Hunger Project* (THP). This NGO, headquartered in New York, operates worldwide and aims to fight hunger and extreme poverty. The NGO helps communities in different countries to create their own schools and health centers, as well as by providing food security, literacy trainings, and banking. Further, the NGO offers programs to educate com-

munity members for political leadership roles, programs to help to empower indigenous communities, and programs to strengthen democracy. In addition to raising funds from private individuals and corporations, THP Switzerland began asking Swiss communities for financial support in 2006. Due to the highly federal nature of the Swiss political system, individual communities have their own developmental budgets. Because THP's initial appeals for funds sent to a small number of communities were very successful, the organization decided to send appeals to all of the about 1600 German speaking Swiss communities. For this mailing, the organization planned to set up a database that included the names and addresses of the communities as well as the names of the current community presidents and administrators to personalize the appeals. Additionally, contact information such as the phone number and e-mail address of the community office were also to be included. This situation presented a unique opportunity to run a field experiment. We hired students for this job via announcements on different university bulletin boards. The job announcement did not reveal the identity of the employer; it only described a one-time data entry job of two hours for which CHF 45 (approximately $37, a standard wage for student workers in Switzerland) could be earned. We did not reveal the identity of the employer to ensure that the students did not think that job involved voluntary work, which might have attracted students with particularly strong social preferences. Interested students could sign up online and were then contacted by our recruiters who assigned them to workgroups of up to twelve students ensuring an approximately equal distribution of gender and subject of study across groups. In total, 150 students participated in the study; they were assigned to one of 16 workgroups with an average number of 9.4 participants per group (group

sizes varied between 7 and 12).[1] 67 students participated in the control sessions without awards (7 sessions) and 83 students participated in the award sessions (9 sessions). The experiment was conducted consecutively, employing one group of students at a time in a university lecture hall equipped with laptops and internet connections.[2] Upon arrival, students were asked to take a seat in front of one of the work stations. The workstations were arranged in a u-shape from allowing for sufficient space between the participants to ensure that students felt unobserved while working. The students were then informed about THP and about their task. The THP database could be accessed online with an individual password that was handed out to the students when entering the room. Online, each student was presented a set of 60 communities. To generate a sufficient number of communities for all the students, most of the 1600 Swiss communities were included in two or more sets. The community sets were generated in a way that ensured equal difficulty of the different sets. The difficulty of finding the relevant information mostly depends on the size of the community, as web presence and detail of information online typically increases with the number of inhabitants in a community. Therefore, communities were sorted into categories by size and each student received the same number of communities of each category. The task of the students consisted in searching contact information on the internet

[1] In unreported regressions, we find that group size is not related to performance.

[2] When introducing THP to the students, we informed them that the Swiss division of THP was small and run by the administrator from her home office. Therefore, a room was requested from the university for the data entry project, which the university provided free of charge. This was done to ensure that students did not wonder about why the job took place in a university building.

and entering it in the database.[3] We informed the students that the names of the president and the administrator were sometimes hard to find but vital for the NGO, as personalized letters are more likely to result in a donation. In the analysis, this allows us to check if the students merely collected the easy-to-find information or acted in the interest of the organization by trying harder to find out the names of the president and administrator. The information on the organization as well as on the task to be performed was given to the students according to a fixed protocol by the same research assistant in all groups. In the award treatment, the chairwomen of the NGO told the subjects at the beginning of the work session that THP wanted to reward the two students who put in most effort in terms of quantity and quality of entries and that the database software would indicate these two names at the end of the session.[4] She also told them that she would personally come at the end of the session to congratulate and thank the winners. The students were further shown the award, a congratulatory note (see Appendix A.1), to ensure that students fully understood that the award was of no material value. In line with other company award systems, the exact criteria according to which the winners would be chosen were specifically left vague. The database software was designed such that it assigned points for each community. The number of points depended on the number of fields completed and was higher for more difficult fields, such as the names of the president and the community administrator.

[3] All students were informed that they could find the basic information, i.e. the address of the community, via the web portal www.ch.ch and that they had to look for the names of the president and administrator and — if not already available on www.ch.ch — also for the phone number and e-mail address via the homepage of the respective communities.

[4] The wording was specifically chosen such that unlike the participants in the control sessions, subjects in the award groups did not get the impression that their performance was closely monitored.

While we were present throughout each session to help students in case there were questions, students were left alone to work for the 2 hours. About 5 minutes before the end of their worktime, we asked the students to fill out a short questionnaire that we portrayed as feedback for THP on how THP handled the employment of the students. The questionnaire included questions about previous database experience, skill in touch typing, perceived difficulty of the task, and level of engagement in volunteer work. During the award sessions, the chairman of THP then handed out the awards. Afterwards, students were paid the CHF 45 in cash. The experiment took place in a three week period in spring 2008 with two or three work groups per day (morning, midday and afternoon). We ensured that award and control treatments took place with equal frequency in each of these time slots.

4.3 Results

Because sessions differed somewhat in length,[5] we analyzed subjects' performance in terms of productivity, i.e, output per minute of worktime. Worktime represents the actual length of a session and is calculated as the span of time between the first opening of a community data-screen and the last saving of an entry in any given session. As output measures we use the number of communities that the subjects worked on per minute and next, the number of points per minute that the subjects achieved. The first measure reflects the

[5] The differences in session lengths are caused by the fact that, in some sessions, students took longer to enter the room, to take their seats and to ask questions. While session lengths are not statistically significantly different between award and control sessions, individual sessions differ to up to 10 minutes and on average the award sessions are a little shorter. Using productivity rather than total output corrects for these differences. Our results reported below are robust when total output is used as the dependent variable.

main goal of the task, namely to enter the addresses of as many communities as possible as this enables the organization to send out the appeals. The second measure takes into account that the different items to be entered are of different importance to the NGO and require different amounts of time and effort. Specifically, the names of the community president and clerk are hard to find online but are valuable to the organization, as personalized letters more likely result in a donation. To generate a performance measure that takes these aspects into account, THP developed a rating scheme before the experiment took place. Specifically, THP attributed a certain number of points to each of the fields to be entered. The performance index is then constructed by adding up the points for all fields that the subject worked on during the job. In total, students could earn 20 points for each community entered: 1 point each for entering the zip code and the name of community or city, 2 points each for entering the address or P.O. Box, the telephone number, and the e-mail address of the community office, 3 points for finding the correct name for the community office (e.g., community office or city bureau), 4 points for the name of the community president and 5 points for the name of the community clerk. Overall, the two performance measures presented reflect the two dimensions of the task: 1) the quantity of work done and 2) the quality in terms of whether students prioritized their work in line with the stated objectives of the organization. Table 4.1 displays the descriptive statistics and shows that students in the award treatment are more productive than those in the control treatment. On average, the performance in the award sessions is 12 percent higher in terms of the number of communities entered and 9 percent higher in terms of the number of points achieved.

Table 4.1: Summary Statistics

	Session	Average number of communities per minute	Average number of points per minute
No award	1	0.216	3.944
	2	0.237	4.412
	3	0.219	3.992
	4	0.222	4.365
	5	0.204	3.967
	6	0.273	4.781
	7	0.222	4.064
	Ø	0.226	4.194
Award	8	0.253	4.479
	9	0.232	4.393
	10	0.249	4.698
	11	0.287	5.261
	12	0.232	4.184
	13	0.233	4.233
	14	0.300	4.452
	15	0.256	4.895
	16	0.256	4.594
	Ø	0.253	4.572

Note: The productivity measures refer to the average output per minute of actual worktime in each session.

Table 4.2: Impact of Award on Labor Productivity

Dependent variable	Communities per minute			Points per minute		
	(1)	(2)	(3)	(4)	(5)	(6)
Award	.0274**	0.034***	0.036***	0.378**	0.458***	0.510***
	(0.010)	(0.010)	(0.010)	(0.153)	(0.156)	(0.164)
Touch typing		0.017	0.015		0.313*	0.269
		(0.012)	(0.012)		(0.177)	(0.193)
Database		0.021	0.025		0.414	0.460
		(0.016)	(0.017)		(0.303)	(0.319)
Concentration			−0.010*			−0.134
			(0.005)			(0.078)
Constant	0.226***	0.209***	0.261***	4.188***	3.858***	4.560***
	(0.007)	(0.011)	(0.026)	(0.101)	(0.168)	(0.440)
N	150	139	138	150	139	138

Note: Robust standard errors are reported in parentheses (data clustered on session-level). ***, **, * indicate significance at the 1-, 5-, and 10-percent level. *Award* is a dummy variable indicating whether the subject worked in an award session. *Touch typing* and *Database* are dummy variables indicating whether the subject knows how to write with the touch system and has experience in working with databases. The variable *concentration* reflects perceived task difficulty on a 7-point Likert-scale on how much the subject agrees with the statement *"The task required my full concentration"* with 1 representing *"I totally disagree"* and 7 representing *"I fully agree"*.

Table 4.2 presents the regression results for three different model specifications. Models 1 presents the simple regression of the dependent variable on the treatment variable and a constant. Model 2 additionally controls for ability, i.e. skill in using the touch typing, and work experience with databases. Model 3 further controls for perceived task difficulty. The additional controls were taken from the questionnaire that was to be completed at the end of each session. As some subjects left responses blank, the number of observations decreases from model 1 to 3.

The regression results show that both types of productivity are significantly higher in the award sessions and that this effort enhancing effect is robust to alternative model specifications. This result is corroborated by a non-parametric analysis (Mann-Whitney test, $p = 0.02$ and $p = 0.04$ respectively, one-sided). The effect size of the award is substantial. Experiments on gift-exchange report output elasticities with respect to wage increases between 0.16 and 0.38 (Fehr et al. (2008)). Hence, the observed increase in performance of about 10 percent is equivalent to what could be induced by increasing hourly wage between 26 and 62 percent. These substantial corresponding wage increases seem quite plausible in light of recent findings that subjects seem to react less strongly to wage increases in the field than in the lab. Dur (2008) argues that this disparity is caused by the fact that in lab experiments, wage is the only means of exchange, while managers in the field also have socioeconomic tools, such as symbolic gifts, at their disposal to build up exchange relationships with their workers. Specifically, the latter may work better than money as signals of kind intentions, thereby causing strong reciprocal reactions from the workers.

Of the other control variables, only skill in using the touch system and concentration become statistically significant in some of the regressions each with the expected sign. None of the other variables we examined in the ques-

tionnaire have a statistically significant impact on performance or the award coefficient. For example, subjects' pro-social motivation that was measured by the frequency with which subjects are engaged in volunteer work and the frequency and amount of donations to charities has no influence on subjects' performance and on how they react to the award. We also do not find a gender effect.

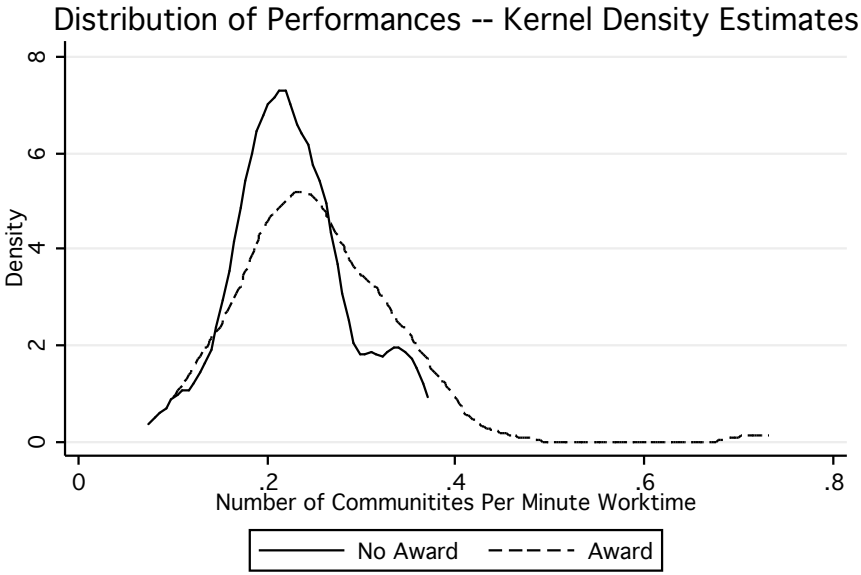
Importantly, the increase in performance comes at no cost in quality. We checked the correctness of every information entered into the database. Looking at the share of fields (address, e-mail, phone number, etc.) that were entered correctly for any given community, we find that on average 88 percent and 87 percent of the information of a community is entered correctly in the control and the award treatment, respectively. Both quality levels are remarkably high and do not differ between the treatments (Mann-Whitney test, $p = 0.310$, two-sided). The same holds for other possible quality measures, such as, e.g., the number of mistakes or the number of communities entered 100 percent correctly. In principle, the higher number of points achieved in the award sessions could either result from a higher number of communities worked on or from a higher quantity of completed fields that produce more points. We find that the former is the case. Therefore, the observed increase in productivity in the award sessions is a quantity effect that does not come at the expense of quality. At the same time, there was also little room for an increase in quality due to the award, as quality levels are also high in the control sessions.

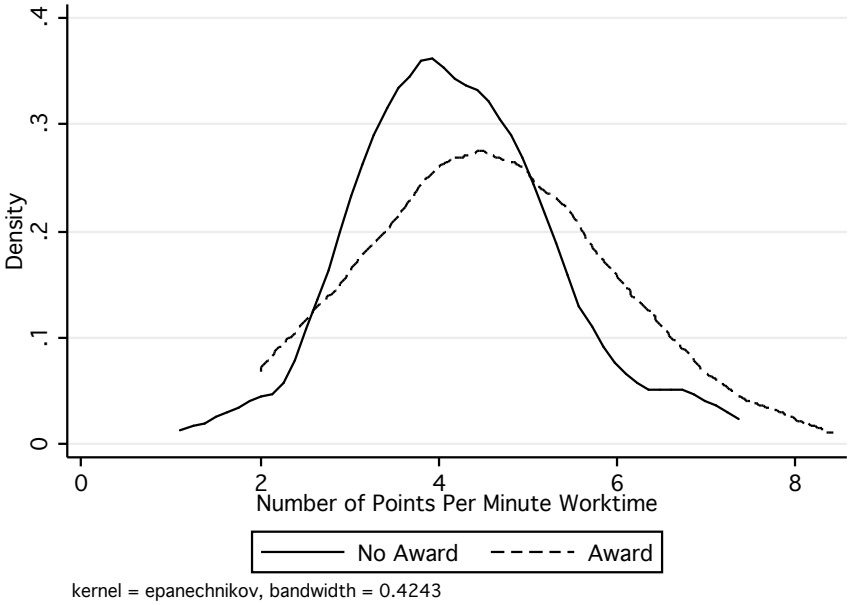
We further inquired into the nature of the performance increase. Provided that awards motivate due to the tournament character of the award, the variance of performances should be higher in the award than in the control treatment, as high ability agents exert additional effort to win the award. Assuming that the award signals that the task itself is of social value and that the

effort of the subjects is much appreciated, the entire distribution of performances should be shifted to the right, as the award motivates all subjects and not merely those that expect to win.

Concerning the number of communities entered, we find that the standard deviation is somewhat higher in the award (0.09) than in the control treatment (0.06) due to higher performances at the top end of the performance spectrum. Hence, part of the increase in performance is caused by the tournament character of the award. At the same time, the whole performance distribution is shifted to the right (see figure 4.3 below). The two-sample Kolmogorov test for equality of distributions is weakly significant. We can reject the hyothesis that the two samples come from the same distribution on the 10% level ($p = 0.08$). The picture is similar for the number of points. Again, the standard deviation is somewhat higher in the award (1.38) than in the control treatment (1.09) and the distribution is shifted to the right. However, the Kolmogorov test does not indicate a statistically significant difference between the two distributions ($p = 0.12$).

Figure 4.1: Performance Distributions





4.4 Conclusion

The reported field experiment shows that awards without any material consequence have a statistically and economically significant impact on work performance. We isolated this performance enhancing effect under the most stringent conditions possible: a one-time, two-hour student job for an unknown employer, among anonymous fellow employees, without any prospect of current or future material benefits due to the award, and in the presence of the experimenters, which probably discouraged shirking. This points to the large significance of these kinds of social incentives in the workplace, which is more often characterized by repeated interaction among agents with their peers and superiors as well as awards that have some material value, e.g., in the form of a bonus or as a signal of talent and motivation for outsiders.

The results also add to the ongoing discussion about the different findings on the impact of reciprocity in gift-exchange relations in the lab and in the field. While lab studies find a large behavioral impact of wage increases on effort; there is relatively little in the field. Dur (2008) argues that this divergence is caused by the fact that employers in the field typically use types of motivators other than wage, e.g., recognition, to signal kindness. Therefore, employees do not reciprocate wage increases in the field to the same extent as they do in the lab, where money is the only means available.

Hence, while the experiment provides clear cut evidence on the behavioral impact of awards, there are also some limitations. For example, it is unclear how far the findings from a one-time, student job should be generalized and applied to ongoing work relationships. Also, one might wonder how much of the effect is attributable to the employer being an NGO and hence, how strong the effect would be in case a for-profit company was the employer. The one-time nature of the employment excludes all effects associated with repeated interactions like reputational concerns, and prevents an investigation

on the sustainability of the incentive effect. Hence, the study does not allow conclusions on how long the incentive effect lasts, on the effect of the awards after their presentation and on the how the behavioral effect changes with the number of awards in circulation. The next chapter addresses one of these issues, namely the effect of awards on its recipients after they are presented.

Chapter 5

The Effect of Awards After They Have Been Presented — An Econometric Assessment

"If an organization is going to function well, it should not rely solely on monetary compensation schemes."

Akerlof and Kranton (2005)

5.1 Introduction

This section estimates the causal effect of receiving an award on subsequent employee performance in the call center of a large international bank. Specifically, we measure the impact of an award for voluntary work behaviors like filling in for colleagues or making improvement suggestions on a measure of core performance, which includes the number of calls taken, the call handling time. Because voluntary work behavior is shown to be uncorrelated with core performance, receiving an awards can be considered to be an exogenous event. Hence, the causal effect of awards on performance can be estimated. Section 2 presents the data and the estimation technique. In Section 3, the empirical findings are discussed and Section 4 concludes.

5.2 Data

The data set comprises information on awards as well as the employee performance of the 155 call center agents of a credit card service company of a large international bank and covers the period January 2004 to October 2007. The call center is responsible for handling customer complaints and questions and consists of six workgroups, each with one manager.

5.2.1 Dependent variable: Performance

The company records daily performance for a number of different performance dimensions, starting in the second month of employment. On a monthly and yearly basis, these measures are transformed into rankings and aggregated into a single performance index. In particular, for each dimension, the percentage deviation between individual performance and the average monthly performance of all the call center agents is calculated and changed into a rating between 5 (very good) and 1 (unsatisfactory), according to a matrix set up by the department head. As an example, an agent that performs 120 percent of the average performance in a dimension receives a rating of 5 in that dimension, and an agent whose performance is 80 percent or lower receives a rating of 1. The relative nature of the performance measurement is an advantage for our study because it ensures that all time-varying factors that affect the absolute performance of all call center agents are excluded.[1]

[1] Theoretically, relative performance measures may have the downside that a change in ratings may not always reflect corresponding changes in effort; hence, ratings may not be comparable across months. This is the case when a variation in the average absolute performance causes a given effort to translate into different ratings in different months. In our setting, however, absolute performance does not exhibit a systematic trend and typically changes only very little between two months in all dimensions. Moreover, the nature of the task renders it highly unlikely that employee fluctuation causes changes in ability distributions dramatic enough to have a sizeable impact on absolute performance. Therefore,

Specifically, the measurement is not affected by an increase in the number or difficulty of calls or by improvements in the technical infrastructure. Both of these factors render absolute performance incomparable over time. In line with exerted effort, the relative rating further ensures that a certain number of calls answered translates into a higher rating in slow rather than in busy months because it is easier to handle a certain number of calls in a months, in which many people call the call center. We use the same index as the company to ensure that our performance measure corresponds to the company's assessment. Because the company continually refines the exact calculation of its performance index by adding and removing different performance dimensions from it, a core performance measure was constructed in collaboration with the call center manager. Our performance index comprises the following six dimensions that have been part of the company's index in all of the periods covered:[2]

1. Calls Taken Per Hour: Average number of phone calls handled per hour.

2. Call Handling Time: Average length of phone call.

3. After Call Worktime: Average amount of time needed to process the request after the call has been ended.

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any change in absolute performance that we observe likely reflects changes in working conditions that should be filtered out.

[2] The company's changes in the index do not reflect systematic and sustained improvements of performance evaluation, which would have suggested that we should use the changing index too. Rather all dimensions that are not captured in our core rating were added and removed at various instances. Examples are the two dimensions *Training*, which measures an employee's performance in in-house training courses, and *Write off Policy*, which measures the degree to which employees follow company guidelines on goodwill issues. Both dimensions were in the company's index only in 2006.

4. Transfer Rate: The average ratio between calls handled by the employee and the number of phone calls that were transferred to colleagues or other service units.

5. Lates: Average number of days on which the employee showed up late for work.

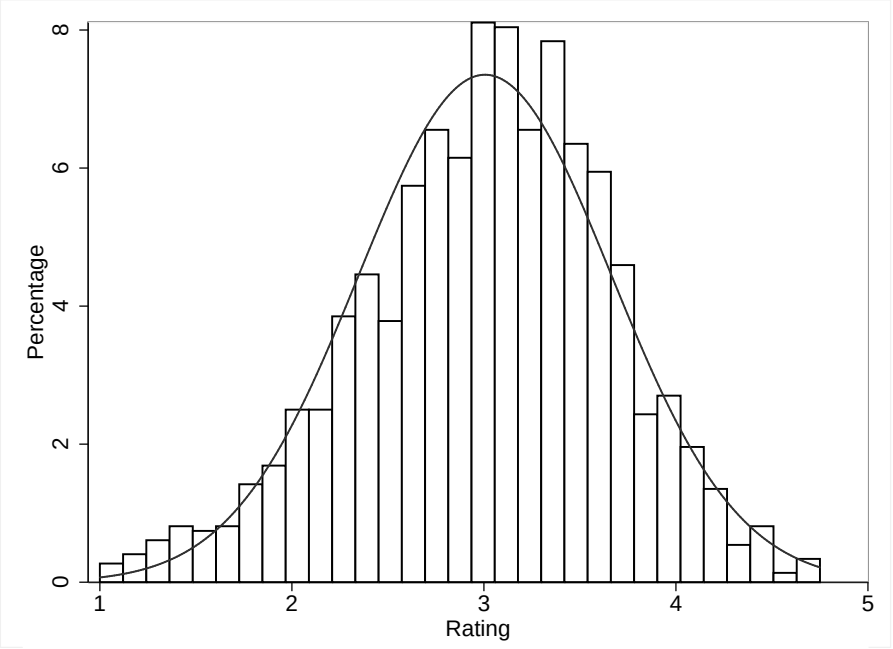
6. Quality: Quality of client handling as assessed by supervisors and clients.[3]

Of these dimensions, only the dimension *Lates* is not evaluated relatively, but according to an absolute scale (no absence corresponds to a rating of 4, one absence to a rating of 3, and more than one absence to a rating of 1). The resulting six ratings are then combined to a single overall rating according to the same weighting scheme used by the company.[4] Specifically, *Quality* enters with a weight of 50 percent and the five other dimensions with 10 percent each. The weighting scheme suggests that the company places equal emphasis on technical measures, such as the number and durations of calls, and content measures, which capture the actual interaction between employee and customer. The resulting index provides an overall assessment of performance. The management confirmed that our core index captured

[3] The rating has an internal and an external component, each of which accounts for 50 percent of the quality rating. Internal quality is assessed by the group manager by periodically monitoring the conversations of each agent. The assessment follows a clear set of rules and guidelines that leaves virtually no room for subjectivity. Evaluation criteria are, for example, whether the agent correctly introduces herself and asks the right set of questions in the prescribed order. The external quality rating is generated by an outside company that conducts surveys with the company's customers.

[4] The addition and deletion of performance dimensions in the company's indices in different years were accompanied by changes in the weights of the individual dimensions. However, the relative weights of the six core performance dimensions remained basically identical throughout the entire time period covered.

Figure 5.1: Distribution of Performance Ratings Against a Normal Distribution



overall performance well and that no important performance dimension was neglected. Figure 5.1 exhibits the density of performance ratings.

The performance ratings are approximately normally distributed with an average of 3.02 and a standard deviation of 0.66 and do not exhibit a time trend. The mean and variation corroborate the objective, quantitative nature of our performance data, as subjectively determined evaluation data typically cluster around high values (on the leniency bias see, e.g., Murphy and Cleveland, 1995; Yariv, 2006) and may cause endogeneity problems because managers might assess award-receiving individuals more favorably. The resulting index represents a weighted average of quantitative performance measures.

Thus, we can treat the rating as cardinal because it takes on many different values and does not have the quality of an ordinal grading scheme.

5.2.2 Independent variable: Awards

The company has a variety of awards. These are called the *Thank You Reward*, the *Gold Reward*, the *Platinum Reward*, the *President Reward*, *Employee of the Month*, and *Employee of the Year*. The requirements for qualifying for these awards increase from *Thank You Reward* to *Employee of the Year*. While a *Thank You Reward*, an email notification of the recipient and a letter sent to the employee's home address, allows a spontaneous exchange of thanks among colleagues, the *President Reward* remunerates activities that have benefited the company as a whole; these require approval by the CEO and come with a personal congratulation by the department head. The winners of *Employee of the Month* and *Employee of the Year* are selected by a reward committee and the CEO from among the winners of the *Platinum* and *President Rewards*. For all awards, there is a close connection between effort and likelihood of nomination, so that individuals can actively pursue winning an award. Appendix B.1 contains a full description of the awards, their requirements, approval procedures, and associated benefits. The award program of the company has been in place since 2001. Therefore, we cannot estimate how the presence of the award system per se changes performance because there is no control group without awards. Rather, this ex-ante incentive effect of awards is part of the baseline motivation of each employee and constant throughout the period of our study.[5]

[5] This incentive effect potentially changes with winning an award. One might argue that the motivation to win decreases once an award has been won. However, such a potential change in baseline motivation renders the detection of a positive change in performance caused by the receipt of an award more difficult.

While our dataset contains information on the winners of all awards other than the *Thank you Reward*, only the *Gold Reward* lends itself to a statistical examination because there are too few observations of call center agents winning the other, more prestigious awards. The *Gold Reward* remunerates exceptional efforts that benefit the entire work group. Nominations can be made by colleagues as well as supervisors.[6] An award is presented by the call center manager in front of the worker's colleagues in the middle of the following month. Award winners, as well as their colleagues, only learn about the award at that ceremony. There is no additional announcement of the award winners; however, the management tries to present the award when many colleagues are on hand. The award is accompanied by a certificate for the wall, which serves as a reminder and ensures that agents not present when the award is presented learn about it, as well as a symbolic bonus of around Swiss Franc (CHF) 150 (about 3 percent of monthly income). Examples of behaviors that qualify for a *Gold Reward* are volunteering as a substitute during vacation times, initiating and implementing team events, making improvement suggestions, and helping others with good advice. Importantly, awards are not presented for the performance used as the dependent variable in our analysis. In fact, core performance is uncorrelated with the activities that lead to an award. Awards are therefore exogenous, and their causal effect on core performance can be identified by comparing the performance of winners and nonrecipients subsequent to winning. If awards depended on performance, they would always be — at least, in part — a reflection of good performance, and a careful creation of control groups would be necessary to identify the

[6] About half of the nominations come from group supervisors and the other half from colleagues. The reasons provided for the nominations do not differ systematically between those by supervisors and colleagues. The Human Resources Department communicates the criteria for nominations well, so almost all nominations result in an award. Interviews with group managers and employees further suggest that employees deserving an award are not ignored, especially as so many individuals can nominate.

causal effect.

The data set comprises 46 awards (*Gold Reward January 2004* to *Gold Reward October 2007*). Overall, 158 *Gold Rewards* were presented to the 155 call center agents between 2004 and 2007. As expected, the distribution is skewed to the right. Two agents received a total of eight *Gold Rewards*, 48 received one,and 76 got none. These numbers suggest that the award is sufficiently scarce for it to be valuable to its recipients, and the sample is well balanced between winners and nonrecipients because about half of the agents never received an award. On average, 3.4 awards are presented per month with a minimum of zero and a maximum of 11.

5.2.3 Further data information

The data set comprises a total of 1480 individual-month observations.[7] Sixty-three percent of the agents in the sample are female, and the agents remain in the sample for 18 months on average.

The call center agents are paid a fixed monthly wage of CHF 4,500 (about $4,500). The exact sum the individual receives depends on her level of experience, knowledge of languages, and length of employment at the call center. The *Gold Reward* complements the company's salary scheme because it incentivizes activities such as substituting for colleagues or organizing team events that are not remunerated as part of the fixed wage. The management asserted that receiving a *Gold Reward* had no effect on future promotion decisions and award winners did not receive special attention, training, or other advantages, for which we cannot control. Hence, although in-house training may increase productivity, it is not correlated with winning awards; therefore,

[7] The initial data set comprised some additional id-month observations that were lost because one or more performance dimensions were not recorded in a particular month due to vacation, sick leave, or failure of the manager to assess the dimension *Quality*.

it does not cause systematic biases because it is not correlated with winning an award.

5.3 Awards and Performance

5.3.1 Empirical specification

To obtain an unbiased estimate of the effect of awards on subsequent performance, one needs a control group of individuals that is identical to those in the treatment group (the group of award winners) in all relevant observable and unobservable factors. Then, the performance of individuals in the control group provides a valid counterfactual for the performance of award winners, and the effect of an award can be estimated as the average difference in performance between individuals in the two groups. Typically, control groups are constructed ex post via matching procedures (see Angrist and Alan, 1999, for an overview). In our particular case, a *Gold Reward* is directed towards behaviors such as supporting colleagues and organizing team events that are not captured in the core performance rating. This feature of the award system suggests that there is no difference in the core performance of award winners and nonrecipients prior to the award. Therefore, we can make the identifying assumption that award winners and nonrecipients of the *Gold Reward* are homogeneous in all factors — other than a fixed effect that we estimate for each individual — that drive core performance prior to winning an award. The quality of this matching (i.e., the validity of our identifying assumption) will be tested as part of the analysis below. As for the observable characteristics (gender and mean length of tenure at the company), there is no statistically significant difference between winners and nonrecipients (i.e., persons with at least one *Gold Reward* and people that never receive one), which further minimizes the concern that there is heterogeneity.

To estimate the effect of receiving an award on subsequent performance, we use an event study technique that allows us to estimate period-specific effects both before and after a *Gold Reward* is won.[8] Under the identification strategy presented above, the causal effect of receiving an award on employee performance is estimated by fitting the following equation to the data:

$$Y_{it} = \alpha + \sum_{\tau=\underline{T}}^{\overline{T}} \pi_\tau W_{i\tau} + \mu_i + \beta X_{it} + \xi_{it} \tag{5.1}$$

The dependent variable Y_{it} represents the performance rating of employee i in period t. Because Y_{it} is constructed as the weighted average of the ratings in the individual performance dimensions discussed above, it takes on many different values and can be treated as continuous (see, e.g., Wooldridge, 2003, 533). The index τ denotes the time period relative to t and is measured in months. τ runs from -6 to +6 and is normalized so that $\tau = 0$ refers to the current month t; $\tau < 0$ refers to months prior to t; $\tau > 0$ refers to months after t. The range of τ determines the size of the event window. The indicator variable μ_i controls nonparametrically for employee fixed effects, such as level of education and gender.[9] Because the resulting panel is unbalanced, the use of dummy variables is preferable to fixed effects as controls for individual-specific effects (see, e.g., Greene, 1997, 623). X_{it} is a vector of time-varying observable characteristics of the individual. In our case these are the length of employment in the call center and its square term. α rep-

[8] A similar technique to study period-specific effects of events was used, for instance, by Greenstone and Moretti (2004) and Peters and Wagner (2007). Event studies have a long history in economics and are used in a variety of settings. An overview is presented in MacKinlay (1997).

[9] In principle, one could also control for time- and award-specific effects. However, the relative nature of our performance measure already eliminates period-specific, exogenous shocks to performance. In addition, the *Gold Rewards* in the individual months that we cover are identical, so there is no reason to expect independent award-specific effects.

resents a constant, and ξ_{it} is a stochastic error term. To calculate standard errors, we cluster on the workgroup level per year.[10] Alternative ways of adjusting standard errors are discussed below.

The key variables in this regression are the $W_{i\tau}$ indicator variables. $W_{i\tau}$ equals 1 for a person i who receives a *Gold Reward* τ from t, and zero otherwise. As the *Gold Reward* is open to all employees in all periods, $W_{i\tau}$ captures all the relevant information because each employee is either a winner or a nonrecipient in each month. The vector π_τ are the parameters of interest in this equation and capture the period-specific effects on performance of winning a *Gold Reward* τ months from the current time period t as compared to not winning an award, conditional on all covariates. By including an indicator variable for each period, the effect of being a winner is allowed to vary with τ. For example, a coefficient $\pi_{+2} = 0.5$ means that the performance of employees who won a *Gold Reward* two periods ago is 0.5 points higher than the one of nonrecipients. The time series of the coefficients π_τ around the event ($\tau = 0$) allows us to detect the causal effect of an award on performance. If the coefficients were significantly positive before the award was presented, there would be concerns about reverse causality. In case the performance of winners and nonrecipients is indistinguishable prior to an award for a large number of periods, we can be confident that our identifying assumption about the homogeneity of winners and nonrecipients holds.

As all individuals are winners or nonrecipients with respect to multiple awards, every performance observation simultaneously helps to identify all 13 different π_τ from π_{+6}, the performance of winners relative to nonrecipi-

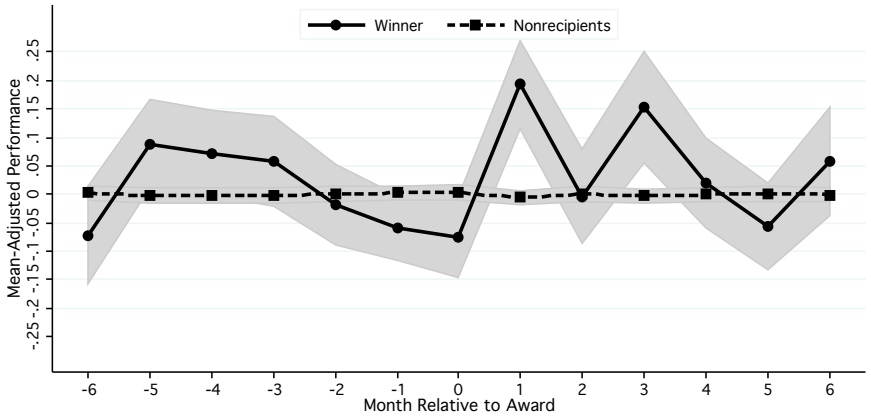
[10] We do not have obvious problems with grouped errors as the unit of observation corresponds with the unit of variation, i.e. the award. However, clustering on workgroups accounts for possible correlations of ratings within teams. As team composition varies between years due to employee fluctuation, workgroup-per-year clusters are used. This also increases the number of clusters, which improves inference due to the asymptotic properties of the clustering procedure (Kiefer, 1980; White, 1980).

ents six months prior to an award, to π_{-6}, the performance of winners relative to nonrecipients six months after an award.

5.3.2 The Performance of winners and nonrecipients

Figure 5.2 shows the average performance of winners and nonrecipients around the award. The performance was corrected for each individuals' fixed effect to ensure the comparability with the main regressions presented below.

Figure 5.2: Performance of Winners and Nonrecipients Prior to and After an Award (With Standard Error Bands)



The figure suggests that the performance of winners and nonrecipients is indistinguishable prior to an award and that the performance of winners increases relative to nonrecipients in the period following the award.

This first impression is confirmed in a regression analysis that controls for individual fixed effects and length of tenure and accounts for potential serial correlation. Table 5.1 presents the results when estimating equation

Table 5.1: Impact of an Award on Performance (+/- 6 months)

	Model 1	Model 2
π_{-6}	-0.055	-0.069
	(-0.54)	(-0.67)
π_{-5}	0.123	0.117
	(1.37)	(1.31)
π_{-4}	0.100	0.098
	(1.40)	(1.47)
π_{-3}	0.076	0.080
	(0.76)	(0.84)
π_{-2}	-0.013	-0.008
	(-0.13)	(-0.09)
π_{-1}	-0.028	-0.020
	(-0.39)	(-0.29)
π_{0}	-0.034	-0.022
	(-0.51)	(-0.33)
π_{+1}	0.234^{**}	0.246^{**}
	(2.73)	(2.96)
π_{+2}	0.015	0.035
	(0.12)	(0.29)
π_{+3}	0.172	0.192
	(1.03)	(1.19)
π_{+4}	-0.006	0.017
	(-0.05)	(0.17)
π_{+5}	-0.050	-0.022
	(-0.85)	(-0.40)
π_{+6}	0.005	0.033
	(0.05)	(0.28)
$Tenure$	0.017^{*}	0.009
	(2.05)	(0.95)
$Tenure^2$	-0.000	-0.000
	(-1.59)	(-0.81)
$Constant$	3.197^{***}	3.228^{***}
	(35.97)	(34.91)
Observations	1130	667
R^2	0.581	0.563

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

(1) for two different subsets of employees. The first model includes all id-months observations with clean event windows. This means that those id-month observations are included where at most one of the winner dummies, $W_{i\tau}$, equals one to eliminate confounding effects. Model 2 only includes the id-month observations of those employees that have received at least one *Gold Reward*. As the entire sample is now comprised only of individuals that have received *Gold Rewards* at different points in time, we do not need to assume that *Gold Reward* winners and employees who never receive an award are homogeneous in their underlying unobservable characteristics. In case the results of model 2 are identical to those of model 1, our identifying assumption that winners and nonrecipients are homogeneous has received additional support.

According to model 1, the performance of winners is 0.24 or 7.4 percent higher than that of nonrecipients one month after the award. This increase is substantial, especially when taking into account the large number of *Gold Reward* winners at the call center and that we use performance in a job dimension that is not relevant for *Gold Reward* decisions as the dependent variable. Two months after the award, the difference in performance becomes insignificant. Consistent with our homogeneity assumption, we find that, in each of the six months prior to an award, recipients and nonrecipients have very similar performance ratings. Indeed, their performance ratings are statistically indistinguishable for this relatively large number of periods. Overall, this finding lends credibility to the identifying assumption that the nonrecipients form a valid counterfactual for the winners. We do find, however, that the fixed effects of winners are, on average, higher than that of agents who never receive an award. While this implies that winners and nonrecipients are indeed not homogeneous with respect to their absolute core performance, they are homogeneous with respect to their core performance once these level

effects have been taken into account because of the long time line of insignificant differences in performance prior to the award.[11] Moreover, the results for model 2 closely resemble those of model 1, which provides further evidence against reverse causality. The control variable *job tenure* does not have a robust statistically significant effect on performance. We also do not find a gender effect.

Result 1: *Awards increase the performance of recipients as compared to nonrecipients subsequent to winning.*

The same is true when using change in performance as the dependent variable. The winners' performances increase significantly more than the nonrecipients' performances between the month prior to the award and the month after. A closer look at performance in the individual performance dimensions shows that the overall result (i.e., the sizes of the coefficients and their significance levels) is reflected in the *Quality* dimension and, to a lesser extent, in the dimension *After Call Worktime*. Performance also increases in all other dimensions, but the effect size and the specific lags that exhibit significant coefficients differ between dimensions and are not strong enough to have a significant effect on the overall rating. However, these findings should be in-

[11] In fact, this implies that employees that are productive in terms of the core performance are also the ones that engage in voluntary work behaviors and hence, that there is no tradeoff between the two kinds of activities. One might counter that awards are given to the productive types not because they actually engage in voluntary work behaviors, but because they collude with supervisors to gain additional compensation for their high performance. However, we can show that within the first five months at the company, employees who receive an award exhibit a higher core performance than those who never receive an award (Mann-Whitney test p-value: 0.07, one-sided). As employees at the beginning of their careers lack the necessary familiarity with their supervisors and the unwritten rules of the company, this supports the notion that it is in fact the high-performing individuals engaging in voluntary work behaviors rather than low-performing types.

terpreted with care because only the aggregate rating is a useful measure of performance due to the trade-offs between the different dimensions.

5.3.3 Development of performance over time

So far, we studied whether the award causes a statistically significant divergence between the performance of winners and nonrecipients after the award. This section Analyzes the performance of winners and nonrecipients over time, which serves as a check for whether winners increase their performance not only relative to nonrecipients, but also relative to their own performance prior to winning. For the following nonparametric analysis, we use performance ratings that are corrected for individual-specific fixed effects and effect of tenure to make the analysis comparable to the regressions above. Comparing the performance of winners between the month of the award and the subsequent month (i.e., periods $\tau = 0$ and $\tau = +1$), the one-sided t-test for paired samples suggests that performance is significantly higher ($\alpha = 0.05$, p-value: 0.03) in the month after the award than in the month of the award. In contrast, the performance in the month prior to the award is not statistically different from that in the month of the award. The average increase in performance between the month prior to the award and the month after the award is 0.16. There is no statistically significant difference in performance between any of these three months for nonrecipients (i.e., between the periods $\tau = -1$, $\tau = 0$ and $\tau = +1$). Performance is evaluated relatively in the company. That is, an individual's performance is compared with the average performance in each month to derive the performance rating. Because there is a large number of nonrecipients in each month, the latter drive the development of the average performance. Hence, one should not expect significant performance changes for nonrecipients. One may argue that the observed increase in the relative performance measure for the winners may be driven

by nonrecipients lowering their performance. If this were true, it would be reflected in a deterioration of absolute performance over time. However, this is not the case. Absolute performance stays relatively stable over the four years covered. In particular, we do not detect a general time trend in absolute performance or any individual performance dimension. In fact, there is a slight increase in absolute performance because quality increases somewhat. Hence, we can be sure that the observed increase in the ratings of the winners represents higher winner effort.

Result 2: *Receiving an award improves the performance of winners, whereas the performance of nonrecipients remains unaffected.*

5.3.4 Why do winners work harder?

The observed increase in performance subsequent to winning an award can be attributed to induced feelings of organizational commitment. Akerlof and Kranton (2005), for instance, state that employees who identify with their company perform better and that employers can actively influence whether employees identify with the company. Specifically, initiation rites, such as award ceremonies, can be used to change self-perception.[12] Our evidence, however, suggests that a *Gold Reward* does not cause a sustainable change in preferences (i.e., employee identity) because the effect is limited to the month subsequent to winning. Endocrine studies suggest that hard-wired mechanisms can raise the performance of award winners. Increases in sta-

[12] According to Akerlof and Kranton (2005), cognitive dissonance (Festinger, 1954) is the underlying psychological mechanism that drives this development of loyalty. Applying cognitive dissonance theory to awards implies that individuals, who have publicly accepted an award and thereby the rules and values of the organization, improve their views and valuation of the organization.

tus caused, for instance, by a victory in a competition have been shown to be associated with a heightened level of testosterone. This in turn increases competitive behavior (Booth et al., 1989; Mazur and Booth, 1998). Such effects can be interpreted as preference changes, even though they affect behavior only for a short time after the occurrence of the change in status (i.e., after winning an award). Psychological evidence also suggests that a positive event, which induces a good mood, increases subsequent voluntary behavior when this is in line with the positive cognitions evoked by the event (Isen and Simmonds, 1978). At the same time, receiving an award can also induce reciprocal actions (e.g., Fehr and Gächter, 2000 or Kube et al., 2008). According to this theory, winners increase their efforts to reciprocate to the monetary bonus associated with winning the *Gold Reward* . However, it is highly unlikely that the entire effect we document is driven by the monetary bonus. First, the amount is small — only 3 percent of the average monthly salary. Second, field studies have shown that the wage elasticity of workers' outputs ranges from roughly 0.15 to 0.44 (Fehr et al., 2008). Thus, the observed increase in performance due to the award of 7.5 percent would require a wage increase between 15 to 50 percent. This corresponds to a bonus of between CHF 750 and 2,500, which is much higher than the actual amount of CHF 150. Another explanation for the observed increase in performance may be the increased visibility of the award winner in the month following the award. Recipients may feel a need to live up to the honor of having received an award for their voluntary work behaviors, and this may affect their core performances. This effect should be stronger for award winners whose core performance was below average prior to the award. The data allow us to test this hypothesis by separating the winners into two groups: those individuals who performed below average in $\tau = 0$ and those who performed above average. Looking at how much performance increases between the

month of the award and one month later, we find that, on average, the rating of low performers increases by 0.58, whereas the performance of high performers decreases by 0.17. The one-sample t-test indicates that both coefficients are highly significantly different from zero.This differential impact of winning an award supports the notion that the increase in performance is caused by social pressure or the winners wanting to live up to the award with respect to core performance. At the same time, the differentiated effect renders it highly unlikely that reciprocity or organizational commitment causes the increase because this should apply to under- and over-performing winners in the same manner. However, the differentiated effect could also be caused by mean reversion. Individuals who achieve a very good performance were lucky that month. Their next draws are unlikely to meet or exceed prior realizations, causing their individual performance to revert to the population mean. Therefore, we use a longer time horizon to classify individuals as high- or low-performing. Specifically, we look at $\tau = +2$, $\tau = +1$, and $\tau = 0$. Individuals that perform worse than average in two or three of those periods are classified as low performers. Low-performing winners increase their rating by 0.29 (which is significantly greater than zero at the 1 percent level), while the rating of high-performing winners changes by 0.03 (not significantly different from zero).[13] Therefore, while there is some mean reversion going on, the differential impact of awards on the rating of high-and low-performing agents is robust.

Arguments explaining the observed effect without resorting to social motives are unlikely to play a role here. The award system is well-established and the criteria clear to all employees. Therefore, handing out the award should not change the relevant information of the agents on the type of behav-

[13] The average rating of high performers in the month when they win an award is 3.52 (std. dev. 0.32), which suggests that the performance of high performers is not bounded from above, and they have the scope to increase their performance the same as low performers.

ior and the required effort level to win. Further, the small bonus of CHF 150 is unlikely to cause an income effect that could explain the result. Moreover, if there were any income effect, it would affect performance in the opposite direction and only strengthen the result that winning the award triggers employees to work harder. A *Gold Reward* has no impact on future promotion decisions, and employees know that. Strategic considerations about trying to win the award again also cannot explain the finding because this would not explain a further increase in performance above the level that was sufficient for winning. Further, if strategic considerations were the motive, the increase should last for more than one period. However, above all, any increase in core performance is by definition of the award criteria not linked to a higher chance of winning another *Gold Reward* because these reward activities are not captured in the core rating.

We can also rule out that the effect is caused by award winners focusing on those activities that lead to the award at the expense of core performance prior to winning. If the argument were true, the performance after the award would be the normal level of core performance, and winners and nonrecipients would not be homogeneous despite the similarity of their performance prior to the award. While such an effect could be imagined if one only looked at the three months prior to an award — the maximum time span that an activity eligible for winning lasts — the long time series of insignificant performance differences prior to an award, which casts doubt on this hypothesis. In addition, the difference in performance after an award should then also be sustained for more than one month.

Regarding the size of the effect, the sizes of the documented effects present a lower bound due to three reasons specific to this study. First, the *Gold Reward* is low in the hierarchy of awards at the company, and one would expect to find even larger effects for the other awards. Second, awards at the

company are presented for beneficial behaviors that are not included in the company's core performance measure, which we use as the dependent variable. Thus, the estimated effect of awards on core performance presents only the spillover effect of the presumably larger effect on those behaviors that are rewarded. One standard objection to awards is that their number will be inefficiently high, as any award system induces unproductive efforts as individuals strive to increase their chances of winning. Our result, however, provides evidence to the contrary, as we observe an increase in productive effort. Hence, even if there were some rent seeking going on, it does not come at the expense of productivity. Third, we only measure the impact of the award subsequent to being presented. However, the award system as such does have an incentive effect that, while it cannot be captured in this study, probably has a substantial impact on the performance of all employees as they work towards the award. In a field experiment, Neckermann and Kosfeld (2008) find that the introduction of an award system increases performance by about 10 percent.[14]

5.3.5 Robustness

This section addresses a variety of issues concerning the reliability of our results. As is the case with most, if not all, event studies, our results exhibit serial correlation. However, this issue does not affect our results because we estimate robust standard errors. Specifically, we report the robust (Huber-White sandwich) estimates of variance that provide correct estimates for any type of correlation within the observations of each panel/group. Moreover, Bertrand et al. (2004) show that, if the intervention variable is not serially

[14] Receiving an award may also have other beneficial side effects that cannot be measured as part of this study. For example, one might conjecture that awards have an additional positive affect on the retention rates of the award winners.

correlated, OLS standard errors are consistent, despite the positive serial correlation in the residuals. This holds in our study because the average correlation of the award variable over time for each individual is close to zero. Serial correlation and heteroskedasticity are more extensively addressed, and additional tests are reported in Appendix B.2. As a further robustness check we used the two-way cluster approach (Cameron et al., 2006), which provides cluster-robust inference when there is non-nested, two-way clustering. The two dimensions that we checked were id and month because one could imagine errors to be clustered for all observations of one individual and within one month. However, our results are robust to this test as table B.1 in the Appendix shows.

We already established above that the direction of causality runs from award to performance by showing (1) that there is no significant difference between the performance of winners and nonrecipients prior to an award and (2) that the results of models 1 and 2 are basically identical. Nevertheless, we additionally tested whether current or lagged performance determines if a person receives a *Gold Reward*. As expected, there is no significant effect of these variables on the likelihood of receiving an award. Only the length of tenure has a significant impact, which provides an additional rationale for including it in the regressions presented above.

Third, the results are robust with respect to the inclusion and exclusion of employees depending on the number of *Gold Rewards* received. The results do not change with a variation in the event window size (we tested event windows ranging from plus/minus 3 –12 months). In addition, the inclusion of time fixed effects has no effect on the results because the relative rating already eliminates any impact of time-varying changes in the business environment. We can also confirm that our result is not driven by the large weight of 50 percent of *Quality* in the index. Using a different index that weights all

performance dimensions equally leads to the same pattern of performance, both in terms of the size of coefficients as well as significance levels.

5.4 Conclusion

This study shows that winning an award for uncontractible, voluntary work behaviors like organizing team events or filling in for sick colleagues has an effect on subsequent performance. In the month after the award, the core performance of winners is 7.5 percent higher than for nonrecipients. Core performance refers to efforts that are more directly linked to business success than the voluntary work behavior rewarded with the award. Specifically, core performance comprises job dimensions like the number of calls handled, the transfer rate of calls, and the quality of the phone calls. This study adds to the economic literature by providing field evidence on the effect of social rewards. Further, it adds to the field experiment presented in the previous chapter by showing that awards not only motivate ex ante, before people have received them, but also ex post, after they have been presented. It is highly likely that awards as well as other reward instruments exhibit such effects. This suggests that the focus of economic theory on ex ante incentive effects has been too narrow. Indeed the present study demonstrates that ex post effects are sizeable, albeit transitory. The ex post effect also refutes the argument that awards only influence behavior via to their effect on future monetary income and the argument that awards only reflect high ability and performance but do not cause it.

Further, this study demonstrates that awards have positive spillovers from one performance dimension to other performance dimensions. Such spillover effects have so far been neglected in the literature. An exception is the literature on motivational crowding out (see 2.2.4) that has investigated the neg-

ative effect of monetary payments on activities not subject to compensation. One would expect that such positive spillovers likely occur when incentives influence the work environment or identity and loyalty of employees (see 2.2.3). However, further research is certainly necessary to identify the conditions under which such spillovers occur and the conditions that allow managers to utilize them deliberately.

This study adds to the economic literature in general by providing evidence on performance in a complex work environment. The job of the call center agents is characterized by many different performance dimensions, including friendliness. As was pointed out earlier, many economists lament the focus of empirical research on incentives on simple and clearly identifiable tasks (Prendergast, 1999).

Unfortunately, the data do not allow one to evaluate absolute performance over time. Hence, it cannot be clearly identified by how much recipients get better when compared to their own previous performance because the performance of nonrecipients may deteriorate at the same time. However, a substantial negative effect on nonrecipients is unlikely because the overall performance in the call center remains stable in the period covered. Hence, the general critique that the positive impact of awards on the recipient should be outweighed by the frustration of the many nonrecipients does not hold. Still, the *Gold Rewards* may frustrate nonrecipients who expected to receive one. Management asserted that they do not expect that extraordinary, voluntary work behaviors that qualify for an award go unnoticed because the award criteria are clearly communicated and because employees are repeatedly reminded of them and encouraged to nominate colleagues for awards. Further, because all employees can nominate potential recipients, it is highly unlikely that no colleague notices award-worthy behavior. However, we cannot show this empirically because we cannot identify the employees who expect to re-

ceive a *Gold Reward* but in fact do not.

A number of issues remain open for future research. First, we cannot identify whether performance increases after winning an award because either employees feel proud or because they feel they are closely observed and under peer-pressure. Hence, further research should aim at gaining a better understanding of the psychological mechanisms that drive the behavioral effect. Such knowledge is important for predicting the motivational power of rewards according to reward characteristics like publicity because different specifications of individual reward characteristics have different implications for the reward's value in terms of self-esteem or prestige. Second, the performance index used in this study provides an adequate picture of overall performance because there are trade-offs between the individual performance dimensions. Therefore, an increase of performance in an individual performance dimension like *number of calls taken* or *call handling time* cannot be judged as an improvement without knowledge on how the agent performed in the other dimensions. Nevertheless, further research that looks at whether there are specific job dimensions that increase disproportionately due to the award would be insightful. Third, the data set only allowed an investigation of the *Gold Rewards*, which are low in the award hierarchy of the company. Future research should capture the impact of higher-ranked awards so that the effects can be compared. One might, for example, hypothesize that more important awards have a more persistent influence on performance subsequent to winning. Further, different psychological mechanisms like sustained changes in identity might play a role for more important awards. The two empirical projects presented so far have provided evidence on the ex ante and ex post motivational influence of awards. The next chapter presents a project that investigates which features of the award — like publicity, number of winners, or any monetary bonus — drive these motivational effects.

Chapter 6

The Effect of Individual Award Characteristics on the Motivational Effect of Awards — A Vignette Study

6.1 Introduction

The preceding two empirical studies have shown that awards have a statistically significant and sizeable effect on employee performance both after they are announced and after they have been presented. This section also focuses on the quantitative effect of introducing and handing out an award. Additionally, it analyzes what award characteristics determine the size of the effect. To answer these questions, a survey experiment was conducted online with the employees of the IBM research lab in Rüschlikon, Switzerland.

6.2 The Vignette Technique

We use the vignette study technique, in which subjects are presented with short descriptions of hypothetical situations called vignettes and asked to indicate their behavior if they were in the described situation. Each vignette consists of randomly selected values for each vignette dimension. The vignette dimensions are the factors that define the situation and represent those variables whose impact on behavior the researcher wants to study. The sys-

tematic variation of the values in the different dimensions allows the researcher to estimate the effects of changes in combinations of variables as well as changes in individual variables. Further methodological information is provided in Rossi and Anderson (1982), McFadden (2001), and Hensher et al. (1999).[1]

Traditional survey approaches tend to elicit unreliable and biased self-reports, as the questions are too abstract (see Bertrand and Mullainathan, 2001; Alexander and Becker, 1978). The vignette technique is preferable, because vignettes closely resemble real-life decision-making situations and are precisely specified, so that the information subjects have at their disposal when making their decisions is standardized. In particular, respondents evaluate a complete situation description (bundle of different factors), rather than having to state how isolated factors influence their behavior. The researcher only later connects the answers of the different individuals with the variables in the description to isolate the impact of particular factors. This is cognitively less challenging and more natural for the respondents and decreases the risk that respondents consciously bias their answers towards socially desirable responses. It also alleviates the problem that most people are not very insightful about the factors that enter their own decision making process, particularly when factors are highly correlated in the real world. Hence vignette studies are more likely than other survey approaches to elicit stable and true preferences. Among many others, Telser and Zweifel (2007), demonstrate the ability of vignette experiments to predict choice behavior. Moreover, results from vignette studies have been shown to be reliable over time, attribute sets, and data collection methods (Bateson and Boulding, 1987).

[1] Vignettes studies are a common research tool in health economics, sociology, and marketing, and there exists a large literature on the method and its reliability and external validity. In behavioral economics, Falk and Kosfeld (2006) use this technique to complement their set of experiments assessing the impact of control on effort in the workplace.

This approach was chosen because the vignette technique has several advantages over laboratory experiments. First, awards present non-monetary, social incentives. Their value — or at least a great part of it — depends on a meaningful relationship of the recipients with both the award giver and the co-workers. Hence, we would expect that actually giving awards would not function well in an anonymous lab setting with an abstract effort task and the experimenter as the award-giver. Second, the investigation of the relative impact of certain award characteristics requires a random variation in the award characteristics over employees of the same company to hold all other factors constant. However, offering different rewards to employees in similar positions at the same company is typically not possible in the field. Third, a great advantage of vignette studies is that they provide more control than qualitative or observational studies but, at the same time, put respondents in natural situations and involve decisions about bundles of factors. Subjects may consider it easier and more natural to make decision under such circumstances than under laboratory conditions. At the same time, vignette studies exhibit a high degree of uniformity and control over the stimulus situation approximating that achieved by researchers using laboratory experimental designs. Confounding factors are not a problem, because vignettes are randomly assigned to a large number of subjects. This ensures that the causal factors are uncorrelated on average, which allows the econometric estimation of effects. Vignette studies are typically not incentivized and one might doubt the accuracy of the stated answers and their capacity to predict actual work behavior. In our particular case, however, there are no strategic reasons that could influence the answers. Importantly, any potential upward biases in the stated contributions to the public good does not matter for the analysis, as we only look at differences in stated contributions for awards with different characteristics. Moreover, we control for individual fixed effects, which filters out

some — if not all — of the potential upward bias in the level of contributions.

6.3 Operationalization of Reward Treatments and Study Design

Each vignette describes the introduction of a new incentive for all employees at the IBM research lab in Rüschlikon. All vignettes have identical textual descriptions; they only differ in terms of the realized factor levels in each of the five different vignette dimensions. Each subject is randomly assigned an award with a particular set of factor levels, and the assignment procedure is precisely analogous to assigning experimental subjects to different treatment combinations in an experimental study. In a pre-study we surveyed awards at different companies and conducted interviews with a number of human resource managers. For the present study, we chose those four, orthogonal factors that that were considered to be important by all managers and that varied most between the different awards surveyed.[2]

Factor 1, type of accompanying reward.
According to standard economic theory compensation should always be in cash, as it is the most efficient means of compensation due to its fungibility and option value (e.g., Waldfogel, 1993, 1996). A gift of the same monetary value does not lead to a higher utility than the equivalent payment in cash making gifts inferior incentives. However, motivational crowding and signaling theory argue that gifts can lead to a higher motivation because gifts are less likely to be perceived as controlling or as destroying the signaling value of certain actions (e.g., Frey, 1997; Frey and Jegen, 2001; Bénabou and

[2] Appendix C.3 contains the wording of the four factors as well as information on how the factors were operationalized in the statistical analysis.

Tirole, 2006b). Social and cognitive psychology describe further advantages of gifts, so far neglected in economics, that may be sufficient to reduce or eliminate any inherent advantage of cash as an incentive (Jeffrey and Shaffer, 2007). To shed light into this theoretical discord about whether cash or gifts of equal monetary value are better motivators, we used cash as well as gifts as prizes associated with receiving the reward.

Factor 2, degree of publicity.

In addition to the motivational power of the prospect of winning the incentive per se, rewards can function as signals to outsiders of the recipient's ability and motivation and bring social recognition by an extended set of colleagues. This requires a degree of publicity; other persons need to know about the award.

To measure the behavioral impact of visibility, each vignette contained one of the following three types of publicity. The list of recipients could: remain undisclosed, be published on the intranet, or be published on the intranet and presented at a ceremony. As with all vignette dimensions, the type of publicity was randomly selected for each vignette.

Factor 3, amount of cash/value of gift.

The accompanying cash payment or gift of the rewards described in the vignettes varied in value between CHF 0 and CHF 10,000.[3]

We expect that motivation increases with the value of the reward.

[3] The set of possible values was CHF 0, CHF 50, CHF 150, CHF 300, CHF 1,000, CHF 2,000, CHF 4,000, CHF 6,000, CHF 8,000, and CHF 10,000. The equivalent Dollar amounts are approximately equal to $ 0, $ 43, $ 128, $ 257, $ 857, $ 1,713, $ 3,427, $ 5,140, $ 6,854, $ 8,567.
In the statistical analysis, monetary value was treated as a continuous variable. Hence, the number of observations necessary to reliably estimate the effect can be substantially lower than when the variable is categorical.

Factor 4, the maximum number of recipients.
Awards only work as incentives if the prospective recipients value them. The perceived (positional) value of an award depends critically on the award being scarce (e.g., Hirsch, 1976). This is a major difference between awards and money. The value of money per se is not decreased by the fact that other employees also receive a salary.[4] Hence, the effect of awards should be lower when there are more recipients. However, there is a countervailing effect. An increase in the number of reward recipients, ceteris paribus, increases the chances an individual employee will be a winner. Hence, we hypothesize an inverted u-shaped relationship between the number of recipients and motivation in the overall population. The same prediction follows from the tournament literature, which shows that maximal incentives occur for intermediate promotion rates, and lower incentives occur for lower and higher promotion rate (Gibbs, 2001).
To study the impact of additional recipients on motivation, the maximum number of award recipients per year varied between 1, 2, 6, 10, 16, and 20 in the reward descriptions.[5]

Table 6.1 gives an overview of the factors and their levels. Further details are provided in the supplementary material at the end of this paper. The number of factors and their levels appears to be rather large. However, by asking people to answer to many situation descriptions, a large number of observations can be generated, which can be evaluated with multiple-regression analysis (rather than mean-comparison). Therefore, fewer observations per

[4] For both awards and salaries it is true that recipients might gain utility from having more awards/ a higher salary than their colleagues. However, this social comparison effect (relative income effect) is different from the inflation effect discussed above.

[5] Like the monetary value of the reward, the number of recipients is treated as a continuous variable in the statistical analysis.

factor combination are necessary to reliably estimate the impact of a certain factor.

Table 6.1: The factors and their levels

Factor	Factor Levels
Type of accompanying reward: (categorical)	gift, cash payment
Degree of publicity: (categorical)	anonymous, intranet announcement, intranet with ceremony
Monetary value of cash payment or gift: (continuous)	zero[a], small[b], medium[c], high[d]
Maximum number of recipients: (continuous)	1, 2, 6, 10, 16, 20

[a] {CHF 0} [b] {CHF 50, 150, 300} [c] {CHF 1,000, 2,000, 4,000}
[d] {CHF 6,000, 8,000, 10,000}

6.3.1 An illustration of a vignette

Individual vignettes, i.e. award descriptions, are constructed by randomly choosing one factor level from each of the independent factors.[6] The total pool of vignettes comprises all possible factor combinations. The four vignettes for each subject were sampled without replacement from this pool. Not all possible vignettes have to be answered as long as the levels of the different factors in the set of vignettes are uncorrelated, i.e. as long as there is little multi-collinearity, and as long as there is sufficient variation in the vignettes. In the sample of vignettes drawn in our study both of these conditions are met. We also have no endogeneity problems as the respondents answered to all the vignettes presented to them.[7]

Below a specific vignette is exhibited with realized factor levels in bold. The factors and their levels are shown in parentheses; subjects did not see this information. The introductory text that was displayed in front of each vignette is presented in the appendix C.2.

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[6] While the assignment of vignettes to individual respondents was random, we ensured that the four award descriptions each subject was confronted with differed in terms of factor levels (e.g., we ensured that each person received one award with zero, small, medium, and high monetary value). Further, each person received at least one award with a cash payment, and one award with a gift. This was necessary to ensure that subjects were not confused by the potential close similarity of award realizations caused by a purely random assignment. Further, we randomized the order in which the different factors appeared in the award description to control for order effects.

[7] Of the 220 observations for the willingness to contribute only nine present instances in which "no answer" was marked. These "no answers" do not appear to correlate with any specific award features, but rather stem from three researchers who answered to zero, one and two vignettes respectively, because some researchers indiscriminately chose not to answer the question.

IBM introduces a new 'Cooperation Award'. Nominations must originate within the team and be supported by the project leader/manager. One level of management in the home office needs to approve the award for the nominated person.
In recognition of the recipients' contribution, the **award comes with a ballpoint pen labeled "Thank you for your exceptional contribution!"** (factor: *type of accompanying reward*; level: *gift*; factor: *value of gift*; factor level: *CHF 0*).
There will be **up to 16 recipients** (about **6%** of researchers and non-technical staff) per year in the Rüschlikon lab (factor: *maximum number of recipients*; factor level: *16*).
The lab director congratulates the winner(s) in the presence of the other members of the lab at the kick-off meeting in January 2008. Award recipients are published on the intranet (factor: *degree of publicity*; factor level: *ceremony and publication on the intranet*).

6.3.2 Operationalization of the dependent variable

The subjects were asked to indicate their willingness to share an important finding with their team before publishing it under their own name. Individuals were told that sharing the finding now would increase the quality and speed of the team project, but expose them to the personal risk that the finding could be used and published without giving them the appropriate personal credit for the discovery. Alternatively, they could wait and publish the finding in a scientific journal under their own name before sharing it with team colleagues. Respondents marked their willingness on a 10-point scale ranging from 1="I definitely would not share now" to 10="I would certainly share

now." Employees were familiar with this type of public good situation in their everyday work life, as was confirmed in interviews preceding the study. In the survey, about 84 percent of the respondents rated the situation description as realistic or very realistic. Appendix C.2 contains the wording of the situation description and the questions asked.

6.3.3 Study design

First, we asked the respondents to state their willingness to share the finding assuming they were working in their current work environment (status quo). Then, subjects were sequentially confronted with four vignettes, i.e. the scenarios describing the introduction of a reward, and asked to indicate their willingness to share the finding in each of them. As each subject answers to four different vignettes, we have multiple observations per person and can control for effects specific to the individual. Due to time constraints, it was not possible to ask about more than four vignettes per subject. These four reward descriptions per individual present a random set out of the total pool of over 100 different reward descriptions, i.e. combinations of values in the four dimensions that characterize each reward. After the fourth vignette, subjects were asked to imagine that they either did or did not receive the reward that was described to them in the final award introduction scenario (vignette 4) and asked again how willing they would be to share the finding now that they know whether they received reward 4 or not.[8] Because this question

[8] Reasons for inquiring about motivation after revealing the recipients only once and after the last vignette are the following: 1) Answers to the different incentive descriptions may otherwise have been biased by whether the person had or had not received the previous reward; 2) Studying the effect of receiving versus not receiving an award is a delicate issue in surveys since it heavily relies on subjects' willingness to imagine their emotional reaction. In general, people are not willing to do this often; 3) Subjects had to state their willingness to share the finding 5 times prior to this question (with respect to their current work environment and after each of the four incentive introduction scenarios). Adding the

was asked only once, we have only one observation of the motivation after revealing the recipients per respondent (rather than four in the case of motivation after incentive announcement). However, we can still draw general conclusions, as the fourth and final reward descriptions represent a random draw from the set of all possible vignettes. The survey ended with a section in which respondents were asked questions about personal characteristics,[9] their perception of the role of awards in organizations, and the determinants of award effectiveness in motivating employees. The questions in the survey section were the same for all participants and placed at the end of the experiment to ensure that subjects are primed as little as possible. Participants were informed about this entire sequence of questions at the beginning of the survey. The respondents progressed through the questionnaire as is shown below.[10] Vignettes 1 to 4 were different for each subject.

1. Each subject is asked about her behavior in the public good situation given their current work environment, i.e. no additional new incentive.

2. Each subject is presented with her particular realization of vignette 1 and then asked about her behavior in the public good situation.

3. Each subject is presented with her particular realization of vignette 2

scenario on winning or not winning the award as well as the associated questions after each reward introduction scenario would have made the questionnaire overly long and repetitive.

[9] Specifically, we inquired age, gender, income range, and award history at IBM. A question about the respondents' level of education was not included in the survey as all researchers have a university degree and most also have a PhD.

[10] To ensure that subjects did not use the first award description as their baseline/reference point and evaluated awards 2 Ð 4 in comparison to the first award scenario, we informed the subjects in advance what kinds of different incentives they could expect; for instance, that the rewards would come with or without a monetary bonus ranging in value from CHF 50 to CHF 10,000. This was necessary to make the answers comparable across subjects, since the realized values and therefore the description of reward 1 was different for each subject.

and then asked about her behavior in the public good situation.

4. Each subject is presented with her particular realization of vignette 3 and then asked about her behavior in the public good situation.

5. Each subject is presented with her particular realization of vignette 4 and then asked about her behavior in the public good situation.

6. Each subject learns whether she receives the reward described in vignette 4 and then asked about her behavior in the public good situation.

7. Each subject is asked a number of survey questions regarding her personal characteristics, her thoughts on the determinants of award success, and her ideas about how awards function in organizations.

6.4 Implementation

The vignette study was conducted in a two-week period in January/ February, 2007, with the 177 researchers of the IBM research lab in Rüschlikon, Switzerland. The lab is one of eight research labs that IBM maintains worldwide. In collaboration with clients and universities, researchers at these labs conduct basic as well as applied research in chemistry, information technology, physics, electrical engineering, and materials science among others. To date, four researchers have been awarded Nobel prizes in physics for research conducted during their time as employees at the IBM lab in Rüschlikon. The management in Rüschlikon hands out the approximately 20 different awards that are available in all IBM research labs. The awards can be broadly separated into formal and informal awards. Formal awards recognize outstanding scientific contributions and innovations, are associated with substantial monetary compensations, and recipients are announced on the worldwide intranet

of IBM research. Informal awards honor exceptional motivation in general; examples are contributions to teams, knowledge sharing, passion for work, and customer service. Informal awards are typically associated with smaller monetary bonuses or gifts such as dinners or weekend trips. Only the more important informal awards are publicized on the local intranet of the Rüschlikon lab. Given the large number of established awards, respondents can be assumed to be familiar with their own behavior and feelings with respect to striving for and receiving awards. This is an advantage for the study, since it increases reliability and the predictive power of our findings.

The participants were invited to the study via an e-mail of the HR Manager and were reminded with a second e-mail at the end of the first week. The questionnaire could be accessed via a link provided in the e-mail. Anonymity was guaranteed. Participation in the study was voluntary and there were no monetary incentives associated with it. During the survey period, 54 researchers (response rate 31 percent) completed the questionnaire, resulting in 211 observations. The respondents are representative of the workforce (and therefore also to the non-respondents) with respect to all objective criteria available from the company.[11]

6.5 Results

6.5.1 Awards as incentives

The data are analyzed with random effects OLS models (see Greene, 1997, p. 623ff). Unlike fixed effects models, these allow the inclusion of time-invariant independent variables. The random effect for each individual cap-

[11] Among the workforce of the IBM lab in Rüschlikon average age, proportion of females, and length of employment are 41 years, 13.2 percent, and 12 years. The respective numbers are 42 years, 10 percent, and 12 years among our sample of respondents.

tures the individual specific propensity to respond to incentive introductions irrespective of the realized award factor levels. This propensity is potentially independent of the initial motivation that we control for separately. Random effect models require that the unobserved individual effect is uncorrelated with all explanatory variables for all observations of that individual. Since the explanatory variables, i.e. the treatments, were randomly assigned to the individual there should be no such correlation. However, our results are robust with respect to other estimation techniques like ordered probit, fixed-effect models, and OLS-regressions that do not include random effects.[12] Table 6.1 in the C.1 presents the results of the different models. We present the random effects OLS rather than the ordered probit results in this section for ease of interpretation. The main regression includes four predictor variables associated with the four factors that were varied to produce specific vignettes. All observations are pooled because subjects receive no feedback in between the different vignettes and there should be no dynamic adjustment of the stated contributions to the public good over time. We also included a predictor variable to control for variation in initial motivation among subjects. Model 1 in table 6.2 shows the results.

The *monetary value of the reward* has a robust and statistically significantly positive impact on contributions, i.e. the willingness to share the sen-

[12] As respondents indicated their answer on a 10-point scale (1:“I definitely would not share now.” to 10=“I would certainly share now.”), one could argue for the use of ordered probit models. However, studies have shown that 10-point scales can be interpreted as (e.g., Van Praag, 1991; Ferrer-i Carbonell and Frijters, 2004; Moffitt et al., 1999). Further, one might advocate the use of fixed effects models and only study within person variation. This is preferable when the unobserved individual effect ai is correlated with any explanatory variable. However, there should be no such correlation in our design. An OLS-model with neither fixed nor random effects, controlling for baseline motivation only, might be suitable when the individuals are not heterogeneous in their reaction to the introduction of an incentive per se (irrespective of reward characteristics). However, a priori this assumption is not necessarily fulfilled.

Table 6.2: Effect of Award Factors on Public Good Contributions

	Model 1	Model 2
Ln(Value)	0.071^{***}	
	(0.021)	
ValueLow: CHF 50, 150, 300		0.032
		(0.198)
ValueMedium: CHF 1,000, 2,000, 4,000		0.561^{***}
		(0.198)
ValueHigh: CHF 6,000, 8,000, 10,000		0.587^{***}
		(0.203)
Intranet	0.307^{*}	0.334^{*}
	(0.185)	(0.186)
Ceremony	0.486^{**}	0.501^{**}
	(0.206)	(0.207)
Gift	-0.404^{***}	-0.408^{***}
	(0.148)	(0.150)
# Recipients	0.008	0.009
	(0.010)	(0.010)
Initial Motivation	0.881^{***}	0.881^{***}
	(0.056)	(0.054)
Constant	0.274	0.344
	(0.475)	(0.463)
Observations	211	211
R^2 within	0.130	0.148
R^2 between	0.811	0.813
R^2 overall	0.753	0.756

Random Effects OLS Regressions; Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

sitive finding with colleagues. We use the log of monetary value to account for diminishing marginal utility with respect to the monetary value of the reward.[13] The coefficient of 0.07 implies that an increase in the value of the award from CHF 0 to CHF 150 increases the stated contributions by 0.34 on a 10-point scale. An increase from CHF 0 to CHF 2000 increases it by 0.52; an increase from CHF 0 to CHF 8000 increases the stated willingness by 0.62 points. Model 2 of table 2 presents the regression results when dummies are used to represent reward value categories. It turns out that zero and small monetary values do not have a statistically significantly different impact on contributions. Also, contributions for medium and high reward values are not statistically different. Compared to the latter, zero or small monetary values lead to a motivation that is half a point lower on a 10-point scale. This difference is statistically significant. In the qualitative survey conducted after the vignette study, the responding employees confirmed the importance of the monetary character of rewards. Almost all indicated that they considered it to be essential for an award to be accompanied by a substantial monetary bonus. This can be interpreted in two ways: First, the money that comes with the award and not the award per se motivates employees. Or second, it is the award per se that motivates employees, but the appreciation of an award depends on whether the award is costly for the employer. Only awards that involve real costs for the employer ensure that the award is meant seriously and is not merely used as a cheap incentive device.

Both forms of publicity, *announcements of the winners on the intranet* and *ceremonies*, have a statistically significantly positive effect on stated contributions to the public good. Compared to a situation with no publicity, contri-

[13] To construct the variable *ln(Value)*, (*Value*+1) is used, since *Value* can be equal to CHF 0. We assume that observed behavior for CHF 0 is not markedly different from what one would observe for CHF 1. Including a dummy for every possible monetary value, which is the most flexible functional form, confirms that the logarithmic specification is appropriate.

butions are on average 0.48 points higher when there is a ceremony, which is substantial. Naming the recipients and having a ceremony increases contributions by as much as increasing the value of the award from CHF 0 to about CHF 1,000. The finding that publicity is important is in line with answers from the survey part of the study. Almost all respondents agreed that awards are important as signals of one's qualities to other employees and outsiders. The coefficient of having a ceremony and announcing the winners on the intranet is substantially larger than the coefficient of an announcement on the intranet alone. For the rewards to serve as signals only the announcement is necessary. Hence, the larger coefficient on the combination of intranet and ceremony indicates that employees value the ceremony per se.

For a given monetary value, *gifts* works less well than *payments in cash*. Holding the value of the reward constant, a gift leads to a willingness to share that is 0.40 points lower than the willingness induced by an equivalent payment in cash. The size of this effect is substantial. For a gift to induce the same willingness to share as a payment in cash of CHF 50, it needs to increase in value from CHF 50 to CHF 2,000. Again, this is in line with remarks by the respondents. In the comment section, a substantial number stated that they preferred money or paid vacation to other kinds of prizes.

The *number of recipients* does not have a statistically significant effect. The two hypothesized countervailing effects might cause this insignificance: an increase in the number of recipients reduces the scarcity value of the award but raises the perceived chances of winning. We also check for the hypothesized inverted u-shaped relationship by including the square term of number of recipients. While the coefficients of number of recipients and its square term are statistically insignificant, they have opposing signs, indicating that two countervailing effects might be at work.

Initial motivation has a highly statistically significant positive effect on

the willingness to share the finding. The respective coefficient implies that a person with a 1-point higher willingness to share the finding in the current work environment is about 0.9 points more willing to share the finding after incentives have been introduced. Hence, subjects that differ in their initial motivation do not markedly differ in their reaction to the introduction of an incentive.

Demographic variables such as *age*, *gender*, and *experience with international teams* do not play a role. We also checked whether the *award history* of the participants, i.e. the number and value of the IBM awards received in the past, was an important determinant for stated sharing behavior. All of these variables are statistically insignificant and the Akaike information criterion indicates that adding them to the models discussed above does not increase the informational content enough to justify their inclusion. The same is true for interaction effects. While there may be order effects, they only introduce noise, and do not bias our results. Further, potential order effects average out over all participants, as each subject receives a different vignette at each stage.

Our data show that rewards have significant and systematic effects on stated contributions of employees in a public good situation that they were well familiar with in their work experience: (1) contributions strictly increase with the monetary value of the reward and a value of zero leads to no increase in contribution; (2) Gifts are valued less than the cash equivalent; (3) Publicity matters. That ceremonies have a larger impact than a publication on the intranet suggests that recipients value direct personal recognition.

6.5.2 The effect of receiving and not receiving the award

Our design also allows us to study how people react when they receive or do not receive the reward. While economic status models (e.g., Auriol and

Renault, 2008) and some psychological literature (e.g., Ambrose and Kulik, 1999) posit a positive effect on effort of receiving and a negative effect of not receiving the award on effort, incentive considerations suggest that winners should be less motivated by the prospect of winning the award a second or third time. Additionally, observing the recipients and their behavior can influence nonrecipients by providing new information on the type and level of effort required to win the reward.

After having stated their contribution to the public good when vignette four was presented, we then told each respondent whether she received the presented reward. Then we asked each respondent again to indicate how willing she was to share the finding now that she knew whether she was a winner or a nonrecipient of reward 4. Model 1 in table 6.3 presents the results of the basic regression in which the willingness to share the finding after revealing the winners is the dependent variable and whether the person receives the reward is the main independent variable. In addition to the reward factors, we control for initial motivation and the incentive effect of the award, i.e. the motivation stated after incentive 4 was announced but not yet handed out (this variable is called *Sharing4* in table 6.3).

The motivation of winners is statistically significantly higher than the motivation of losers. The difference in contribution is 0.70 on a 10-point scale. Persons with a higher initial motivation and those with a higher willingness to share the finding after reward 4 was introduced are more willing to share the finding after announcing the winners independently of whether they receive the reward. The award factors do not have a robust statistically significant effect on the motivation after announcing the winners other than via the contribution stated after the introduction, but prior to conferral of reward 4, marked as *Sharing4* in the table 6.3. The previous analysis showed that *Sharing4* is influenced by the award factors. *Ceremony* exhibits a weakly sig-

Table 6.3: The Effect of Receiving or Not Receiving an Award

	Model 1	Model 2
Received/Not Received	0.701^{**}	1.778
	(0.295)	(1.496)
Ln(Value)	−0.001	0.039
	(0.057)	(0.093)
Intranet	−0.069	0.530
	(0.319)	(0.480)
Ceremony	-0.732^{*}	−0.245
	(0.427)	(0.791)
Gift	0.373	0.324
	(0.314)	(0.519)
# Recipients	−0.018	−0.018
	(0.024)	(0.037)
Sharing4	0.629^{***}	0.611^{***}
	(0.094)	(0.152)
Initial Motivation	0.352^{***}	0.396^{**}
	(0.102)	(0.148)
Ln(Value)*Received		−0.059
		(0.126)
Intranet*Received		-1.224^{*}
		(0.687)
Ceremony*Received		−0.809
		(0.968)
Gift*Received		0.213
		(0.678)
# Recipients*Received		0.014
		(0.051)
Sharing4*Received		0.063
		(0.202)
Initital motivation*Received		−0.101
		(0.214)
Constant	−0.054	−0.786
	(0.672)	(1.197)
Observations	52	52
Adj. R^2	0.860	0.847

Random Effects OLS Regressions; Standard errors in parentheses
Sharing4 is the willingness to share the finding that the subjects indicated after vignette 4, i.e. after the announcement of reward 4, but before learning whether they received reward 4 or not.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

nificant, negative impact in model 1. This effect is, however, not robust. To check whether award factors or the size of motivation prior to revealing the recipients have different effects on winners and losers, we include interaction effects of all award factors and whether the reward was received. The results, which are displayed in model 2 of table 6.3, indicate that the award factors do not have statistically significantly different effects on winners and losers. The only exception is the weakly significant negative interaction effect between *winning* and *intranet*. [14]

In a separate calculation we subtracted the motivation after revealing the winners from the motivation upon announcement but before conferral of reward 4 for each respondent. This shows that losers on average decrease their motivation by 0.4, while winners increase it by approximately the same amount. The effect on the nonrecipients is negative at the 90 percent confidence level, while the effect on the recipients is positive at the 95 percent confidence level. Hence, winners do indeed increase their motivation upon receipt. In contrast, losers experience a decrease in motivation, which could be due to disappointment or information updating. The magnitude of the effects of winning and losing are substantial. Hence, at the aggregate level it is not enough to assess the effects of awards upon announcement in order to determine the profitability of an award.

6.6 Conclusion and Discussion

This chapter addresses the relative importance of individual award characteristics in term of the overall effect of an award on performance. Further, how of winners and nonrecipients react to the presentation of an award is inves-

[14] This finding seems plausible in light of the fact that *intranet* has a substantial positive impact on contributions when the award is announced. Hence, there is less room for further increases subsequent to winning.

tigated. We find that respondents react systematically to the announcement of the award; namely, the willingness to contribute increases monotonically with the value of the monetary payment or gift that comes with the award, and it is lower for gifts than payments of equal value. Contributions are significantly higher for awards whose winners are publicized within the company and for awards whose winners are celebrated in a public ceremony. We find that nonrecipients decrease and recipients increase their stated contributions relative to the motivation they indicated before the award was announced. Investigating the influence of the individual award characteristics suggests that it is necessary to design awards carefully. In general, good award systems should minimize the negative impact of awards on nonrecipients and incorporate those award characteristics that the employees value, such as publicity. This is necessary because the establishment of awards, as is the case for all incentive schemes, has risks; poorly designed awards may backfire.

The presented evidence does not allow a final assessment of the overall profitability of introducing an award. Predicting the overall quantitative change in behavior due to the introduction of an award is difficult because aggregating the effects over all employees requires one to estimate the time until the disappointment among losers subsides and the ex ante incentive effect returns. Moreover, it is unclear how the incentive effect changes over time as heterogeneous employees both win and lose multiple awards. The profitability of awards for the company also depends on the impact of the induced changes in behavior on company profit and on the costs of award administration, information that is often hard to determine.

This section also makes a methodological point by employing the vignette technique, which is a powerful empirical tool that permits the researcher to isolate the effects of individual factors without artificially restricting the number of factors present. Vignette studies should be taken seriously as a valuable

method in behavioral economics.

Overall, this study adds to the previous two studies by providing a third piece of evidence that shows that awards have a significant impact on motivation and induce systematic changes in behavior. This points to the robustness of the behavioral impact of awards. It extends the findings of the other empirical projects presented in four specific dimensions. First, as compared to the call center study, the direct impact of the award on the rewarded activity is assessed. The call center study looked at the spillover effect of an award for voluntary work behaviors on core performance. Taken together the two studies demonstrate that awards have a significant positive influence on both rewarded and unrewarded tasks. Second, as compared to the field experiment, the agents in this study are in a long-term employment relationship. As compared to the two other studies the task investigated is highly complex and requires a high level of education and skill. Hence, the demonstrated effect of awards is not restricted to one-time jobs involving simple tasks. Third, as compared to the field experiments, agents in this study work in a for-profit setting and they constitute a different sample of people from the population. This implies that awards work well for researchers, students, and call center agents. Awards do not just work well for NGOs. Fourth, the study differs from the other two studies in the method used. The data for this study were generated with a survey experiment. The other projects used either field experiment or company data. In contrast to the other two studies, not all company employees actually participated in the present study. Further, performance is assessed by stated choices rather than by observed behavior, and the answers are not directly incentivized. As was discussed above, these factors do not compromise the validity of our findings.

While highlighting the robustness of the effect of awards on employee performance, the differences between the three studies make it hard to compare

findings among them. In contrast to the experiment at IBM, the call center study, suggests that awards do not have a negative effect on nonrecipients. In principle, a number of factors could cause this divergence. It could, for instance, be induced by the difference in methodology employed, by the difference in the sample composition of employees, or by the smaller salience of the *Gold Reward* at the call center than the newly introduced award at IBM. The differences mentioned also make it difficult to integrate the findings from the three studies. The vignette study demonstrated, for example, that cash is preferable to gifts in-kind as rewards associated with winning an award. It is unclear whether cash would also work better than gifts in the call center. Further, the size of the incentive effect of awards is not directly comparable between the field experiment and the vignette study because the survey method employed at IBM prohibits an interpretation of the absolute change in performance. Thus, in order to increase the predictive power of the established findings, further research is necessary to examine how mediating factors like the nature of task or the type of employee influence the effectiveness of awards.

Chapter 7

Conclusion

"No appetite in human nature is more universal than that for honor."

(Adams, 1973/1790, p. 51)

This thesis has argued that awards are a unique kind of incentive that differ from monetary incentives and from other forms of social recognition like praise. A theoretical analysis as well as findings from manager interviews highlighted a number of differences. Awards are more formal than most other social incentives and differ from tournaments for promotion in terms of the rewarded activities and the number of potential winners. Further, awards are more durable than rewards in the form of gifts in-kind, which are consumed. Unique features of awards are the publication of the recipients via a ceremony or notification and an associated trophy or certificate. These give awards a higher value as signals of unobservable employee characteristics than other incentives do. Awards can also be used more flexibly than monetary forms of compensation and require a less strict system for measuring performance. Therefore, awards can be used to reward vaguely defined tasks and are less likely to exhibit the detrimental effects on intrinsic motivation that have been demonstrated for performance pay. In contrast to monetary compensation, the value of awards can be influenced by the giver because it depends on the scarcity of the award, the fairness of the procedures, and the prestige of the organization. Further, awards induce loyalty so that employees are more

likely to act in the interest of the company even in the absence of explicit monetary incentives.

It was empirically demonstrated that awards influence employee behavior and a number of theoretical accounts have been discussed that explain such an effect. Specifically, it was shown that awards have a sizeable ex ante incentive effect on employee effort. A vignette study investigating which award features are most important revealed the importance of publicity as well as the size of the associated material reward. Finally, an empirical analysis of the performance of call-center agents demonstrated that awards influence performance ex post after they are presented and in unrewarded performance dimensions.

These theoretical and empirical findings have implications for economic theory as well as for practitioners. General implications for economic theory concern how it can be enriched to account for non-monetary, social incentives are included in the section on open issues below.

7.1 Implications for Economic Theory

So far, economic theory has mainly focused on material incentives to induce effort and to align the interests of principal and agents. While this approach has been very successful in explaining a wide variety of behaviors both in economic settings and elsewhere, a number of relevant phenomena could not be explained. To reconcile economic theory with empirical facts, the last decade has seen an increasing attempt to incorporate non-standard preferences in the form of altruism, fairness, and self-image. However, the literature has been largely silent about how these concerns can be instrumentalized as incentives in principal-agent relationships. This thesis has provided empirical evidence that awards have a significant and systematic effect on behavior.

Hence, awards should be considered an additional instrument in principal-agent theory. By incorporating awards and other non-monetary rewards into economic theory, further insights can be gained into how incentive systems can take account of agents' desire for (self-) esteem.

The econometric study at the call center demonstrated that awards have positive spillover effects on performance dimensions that are not pertinent to the award. At the same time, the literature on motivational crowding out has shown that monetary payments may have negative spillovers on other performance dimensions. So far, such spillover effects have rarely been addressed in economic theory. An explicit account of spillovers may be valuable to better understand if such spillovers can be exploited to induce agents to engage in tasks for which direct incentives might not work.

This thesis further showed that the overall impact of an award depends on individual award features like the type of publicity associated with winning. This suggests that it might be worthwhile for economic theory to explicitly model the different features of rewards rather than just their monetary value. One would, for example, also expect that the impact of a monetary payment differs depending on whether the payment is private or public knowledge.

The comparison of awards with other incentive instruments revealed important differences. It was shown that the nature of the task affects how well awards work and if awards or monetary rewards are preferable. Specifically, it was shown that awards are less likely than monetary compensation to crowd-out the intrinsic motivation to engage in a task and to cause multi-tasking problems in situations in which performance can only be partially measured. Moreover, the effectiveness of awards depends on employee-, company-, and country-specific variables such as hierarchical position, organizational norms, and culture. Awards have, for example, a large incentive effect for employees low in the company hierarchy. So far, economic theory has mostly

abstracted from such environmental and situational factors. Hence, while it could explain the basic mechanisms via which incentives work, it sometimes had little predictive power with respect to the strength of the effect and the types of situations suitable for a particular incentive.

Awards typically only have a small material value. Therefore some other mechanism is needed to establish their value. One way to make awards valuable is by keeping them scarce. The value of awards also depends on the sincerity with which they are presented because they are only esteemed if the recipients perceive them to express genuine recognition. Therefore, the ways the award is announced, its criteria are communicated, and it is presented to the winner are important determinants of the incentive effect of awards. Thus, the value of awards is can partly determined by the award-giving institution. Economic theory has so far abstracted from issues like the communication of the incentive system assuming that the value of the material awards that were considered is exogenous. When extending the analysis beyond purely material rewards, however, such features need to be incorporated.

The evidence presented also has implications for empirical work. Overall, much more empirical research is needed on social incentives in general and awards in particular. While economic theory has, at least, started to incorporate non-material motivators, systematic and clear empirical accounts of their impact in the workplace are still rare. Exceptions include the literature on altruism and reciprocity that has been partly extended to the corporate setting. As was pointed out earlier, there is basically no empirical evidence regarding the effects of formal recognition programs like awards on work behavior beyond what has been presented in this book. Further research is required to illuminate the contextual factors that determine the effects of such programs and how they interact with other incentives.

7.2 Implications for Practitioners

As was discussed in the introduction of this thesis, recognition drives employee motivation, which is essential for business effectiveness and competitiveness. Despite the substantial management literature on recognition,[1] management has mostly ignored the power of recognition. Awards may be one instrument that allows to tap this source of motivation.

The studies presented in this thesis clearly demonstrate the substantial impact of awards on employee performance. This suggests that managers may do well to systematically employ such non-monetary, social motivators in addition to or even in lieu of financial incentives. Further, the vignette study pointed to the large role of publicity. Thus, managers should pay attention to the design of an award ceremony or intranet publication when installing a formal recognition program.

The main aim of this thesis was not to provide practitioners with detailed suggestions about how and when to apply awards. Rather it was to demonstrate empirically the relevance of social motivators like awards in a corporate setting. Nevertheless, the conceptual analysis allows drawing some conclusions on when human resources managers should use awards. Awards rather than performance pay should be used when there are norms against monetary compensation for a particular kind of activity or when performance evaluation criteria cannot be clearly specified. Further, awards are preferable to monetary incentives in situations in which agents care about signaling their performance to outsiders and in situations in which social- and self-esteem are important. Moreover, awards are preferable when management needs to rely on a high degree of intrinsic motivation. Awards should be used in addi-

[1] See the large number of practitioner guides on motivating employees with recognition like Townsend and Gebhardt (1997); Glassock and Gram (1999); Ventrice (2003); Podmoroff (2005); Nelson (2005).

tion to appropriate monetary compensation when employees lack recognition because, for example, they occupy the low ranks of the company hierarchy.

Awards serve as incentives along many dimensions because they entail a number of different benefits for the recipient such as status, recognition, current and future material benefits. Thus, awards are preferable to other motivators when the needs of the employees are heterogeneous. Of course, monetary compensation also has implications for an agent's social standing. But, awards provide a broader array of incentives. Awards may complement feedback and praise, which play an important role for motivating agents on a day-to-day basis. Awards are more formal than praise and feedback and therefore bring a different kind of recognition. Specifically, awards serve as a reward for outstanding performances above what can be considered to be a "normal" part of an employee's job. The formal nomination and selection procedure as well as the public presentation of the award and the public recognition of company managers confer special value on awards.

For more detailed policy implications further research is needed to explore the channels via which awards motivate and the contextual factors that influence the effectiveness of awards. These and other issues are examined in the next section.

7.3 Limitations and Further Open Issues

As a first approach to awards, this thesis has treated awards as one uniform kind of incentive instrument. However, there is a great variety of awards in the corporate sector and beyond. These awards differ along a number of dimensions such as the degree of publicity, the type of activity rewarded, the size of the monetary component, and whether award winners are determined on an absolute or a relative scale. These differences likely have an impact on

the attractiveness of awards to different kinds of employees. Thus, it might be worthwhile to abandon the simplifying assumption that awards are undifferentiated and instead ask how differences among awards influence their motivational impact.

The empirical studies presented rely on experiments, field data, and the vignette technique. I exploit the advantages of each method (such as the exogeneity of the award in the field experiment or the real-world employment situation in the call center study). Taken together the findings from the different studies present a comprehensive assessment of awards. That all studies report a significant influence of awards points to the robustness of awards effects. However, the differences in methodology used, the awards implemented and the employment situation studied preclude a direct comparison of the results.

Additional empirical research is needed on what determines the desirability of social versus monetary incentives. Important variables include the nature of the task, culture, the institutional environment, and the business environment. Knowledge on these factors will help to augment economic theory and allow more specific policy implications for human resources managers. Moreover, the relative importance of the different channels via which awards affect behavior deserves further inquiry. The large impact of publicity demonstrated in the vignette study suggests that social recognition plays a substantial role with respect to the motivating power of awards. Nevertheless, it might be valuable to know how much of the effect remains when only the recipient herself knows about the award. If such private awards still motivate significantly, they may be suitable incentive instruments in situations where managers fear a large negative impact on nonrecipients.

Another open issue is the interdependency of incentives. An interesting question in this regard is whether and when awards should be used in combi-

nation with other incentives and when they can even substitute for them. As is demonstrated in the organizational behavior literature, there are synergistic effects between praise, money and feedback as incentives. Awards comprise all three elements, and they may represent a combination that best exploits the synergies present. At the same time, there may also be synergies when combining awards with yet other incentive instruments. An important open question is when and why monetary compensation leads to social recognition. In situations in which money is an accepted basis for granting prestige, money may be less likely to crowd out the signaling value of pro-social activities, and awards may in fact be less effective than money in promoting such activities.

Further, this study, just as much of the economics literature in general, has focused on employee effort as the dependent variable. While effort is, of course, important, practitioners consider other outcome variables, such as job satisfaction, job retention and health. Future research should investigate the comparative effect of different incentives on these outcome variables.

Additionally, economic theory should take into account that agents typically face more than one kind of incentive. The multi-dimensionality of incentive provision has so far been neglected,[2] and an explicit incorporation may help explain phenomena like the fact that agents sometimes accept reductions in their monetary payoffs if this increases social recognition or future career options.

Different incentives may also interact with each other in a non-linear way. A number of accounts have shown that the effect of monetary incentives for a task that yields a positive image effect is smaller in public than in private settings (e.g., Ariely et al., 2009). Further, the reduction of all incentives to their

[2] Exceptions are a few theoretical accounts that study, for example, how status incentives or promotions can complement variable monetary compensation (Auriol and Renault, 2008).

material value has prohibited an inquiry into when and to what extent different incentives may serve as complements or substitutes depending, for example, on the nature of the task at hand. A mix of incentives can simultaneously address a variety of needs and potentially overcome the negative side effects associated with one-dimensional incentive schemes. The exploitation of a social norm can mitigate effort distortions induced by pay-for-performance schemes in settings that are susceptible to multi-tasking problems (Bruggen and Moers, 2007).

7.4 Broadening the Scope of the Analysis: Awards Outside the Corporate Sector

This thesis has studied awards as incentives in principal-agent relationships where the employer gives awards to her employee. However, awards are present in many other areas of social and economic life. In fact, awards are present just about everywhere we look. Awards are present on the national level in the form of state orders and decorations. In the arts, culture and the media, awards are also of central importance. Prominent examples are the Academy Awards (*Oscars*), the prizes handed out by the film festivals at Cannes, the *Grammy* award for artistic significance in the field of recording, or the *Brooker* and *Pulitzer Prizes* in literature. In sports, athletes may receive the honor of being chosen *Sports Personality of the Year*, and of being admitted into one of the many *Halls of Fame*. Academia also has an elaborate and extensive system of awards, such as honorary doctorates, prizes such as the *Fields Medal* in mathematics or the *Nobel Prizes*, as well as a multitude of prestigious fellowships. The media support this by creating their own awards and by regularly choosing a *Best Manager* (*Business Week*) or a *CEO of the Year* (*Financial World*).

Awards in these areas may serve different goals and functions, and they may also differ in terms of the mechanisms via which they work. On the national level, for example, award ceremonies are used by heads of state to demonstrate proximity to the "common man". Also, awards are often given to prominent persons to associate the government with popular individuals. Thus, national awards differ from corporate awards in that the presentation of the award brings a direct benefit to the award giver. Another interesting difference is that state awards are typically not associated with monetary bonuses. This is consistent with the argument made above that a monetary payment is necessary in the corporate sector to credibly signal the recognition provided with the award in an environment characterized by monetary exchange and profit seeking. Outside this realm, awards are less likely to be mistaken as a cheap incentive device, especially because the publicity of these awards is much greater,[3] and the procedures for nominating and selecting the winners are more elaborate, and hence costly, due to greater anonymity and a larger pool of potential recipients.

The function and value of awards also differs between the sectors mentioned above. In the cultural sector, for example, many awards serve the explicit purpose of being signals of ability and talent. As quality is hard to assess even for informed parties, and as the supply of cultural products is huge, prizes bring attention and serve as quality signals. Hence, basically all awards in this sector have obvious material consequences. In fact, awards are often the sole criterion people use when deciding which movie to go to or which author's book to buy. State orders are at the other extreme, having ba-

[3] This ensures that the recipient receives substantial social recognition irrespective of the recognition by the award giver. At the same time, the greater publicity establishes a well-remembered association of the award giver with the recipient. This makes a careful and serious selection of the winners necessary, especially because it is likely that the media would expose the sham if the award went to an undeserving individual.

sically no signaling value for the recipient but bringing immense recognition in the form of public attention and recognition by heads of state.

Despite their prevalence, economics has produced little knowledge on awards outside the corporate sector. One way to approach the subject would be to study awards across countries by investigating the determinants that render awards important in a country. Alternatively, studying the history of certain kinds of awards like state orders, or comparing the prevalence and kinds of awards in different sectors may be insightful.

The economic literature on awards is still in its infancy and many issues remain open for future research. If the reader is now convinced that non-material motivators in the form of awards have unique properties and significantly influence behavior, this thesis has achieved its aim.

Appendix A

Material to Chapter 4

A.1 The Award

Figure A.1: The Award Certificate
The text translates to “The Hunger Project Switzerland congratulates ... to his/her dedicated and motivated work in creating the community address database. This new database enables us to systematically approach communities with appeals for donations.”

Appendix B

Material to Chapter 5

B.1 Awards at the Company

B.1.1 The *Thank You* Reward

The *Thank You* reward is exchanged between colleagues. Whenever an employee chooses a colleague for a *Thank You* reward, the recipient immediately receives a notification per email and a letter is sent to her home address. Once a month, the three employees with the highest number of *Thank You* rewards receive gifts (if two employees have the same number of awards, a lottery decides). The first prize is dinner for two (value CHF 200); the second prize is traveler's checks (value CHF 100); the third prize is two cinema tickets (value CHF 40).

B.1.2 The *Gold Reward*

The *Gold Reward* is presented for extraordinary, non-contractual performance with an impact on the output of the whole work group. Each employee can nominate a colleague for a *Gold Reward*. Approval is required by the group manager of the nominated employee. Each *Gold Reward* is accompanied by a certificate for the wall as well as a bonus between CHF 100 and CHF 250 ($100 and $250). The reward is presented by the call center manager in front of the other team members. Additionally, the names of the winners are pub-

lished on the intranet and listed in the monthly company newsletter, and the winners receive a trophy, which has their names engraved on it.

B.1.3 The *Platinum Reward*

The *Platinum Reward* is handed out (1) for exceptional efforts benefiting the whole department or (2) for extraordinary performance over an extended period of time. As a general rule, the behavior of the winner must clearly represent the values of the organization. Special attention is given to actions that further cooperation and collaboration across departments. As is the case with a *Gold Reward*, colleagues nominate individuals for a *Platinum Reward*. Both the department head as well as the supra-departmental reward committee have to approve the nomination. The *Platinum Reward* is presented by the human resources manager and comes with a bonus of between CHF 300 and CHF 750 ($300 and $750) and a trophy. The names of the winners are published on the intranet, listed in the monthly company newsletter, and additionally mentioned at the yearly Christmas ceremony. The *Platinum Reward* is presented much less frequently than the *Gold Reward*. Between 2004 and 2007, it was awarded to only seven employees in the call center. In general, call center employees have little scope to affect the performance of the whole department or to establish and foster cooperation between the departments. Hence, they have only limited opportunities to qualify for a *Platinum Reward*.

B.1.4 The *President Reward*

The nomination and approval procedure for the *President Reward* is identical to the one described for the *Platinum Reward*. However, this award requires the CEO's approval. The *President Reward* requites efforts that have benefited the company as a whole. As only a few activities meet this requirement,

there are only a few *President Rewards* each month. Examples of actions that qualify for the *President Reward* are process innovations that save costs or discoveries of major credit card frauds. The *President Reward* comes with a trophy and an amount between CHF 1,000 and CHF 2,000 (the amount is about the same in US$). The names of the winners are published on the intranet, listed in the monthly company newsletter, and additionally announced at the yearly Christmas ceremony.

B.1.5 The *Employee of the Month*

Each month, a committee chooses one of the *Platinum* and *President Reward* winners of the previous month as the *Employee of the Month* (*Gold Reward* winners are also considered when there are too few *Platinum* and *President Reward* winners). The title is awarded to that *Platinum* or *President Reward* winner who made the most significant contribution, in particular, a contribution that affects the success of the organization as a whole. The nomination requires approval by the CEO, and the award is presented by the human resources manager, often together with the CEO. The award comes with the privilege of using a company mini Cooper (including gasoline) in the respective month and a trophy. Between 2004 and 2007, five call center agents were awarded this title. An email containing a picture of the winner notifies all employees of the new *Employee of the Month*. In addition, the CEO mentions all *Employees of the Month* winners and shows their pictures at the yearly Christmas celebration.

Gold, *Platinum*, and *President Rewards* can be won multiple times by each call center agent and can be awarded to multiple employees in the same month. There is only one *Employee of the Month* per month, and this title can be awarded to the same individual only once per calendar year.

B.1.6 The *Employee of the Year*

At the end of each year, the reward committee and the CEO choose an *Employee of the Year* from among the *Employee of the Month* winners. The title is awarded to that *Employee of the Month* whose contribution benefited the company the most. The title is awarded at the yearly Christmas ceremony and comes with a trophy as well as a week of paid vacation in a summer cottage for up to six people including a generous allowance.

B.2 Serial Correlation and Heteroskedasticity

With event studies two concerns are serial correlation and heteroskedasticity of the disturbances. These would render the least squares estimator inefficient and even inconsistent if some regressors are lagged dependent variables. Standard test statistics, such as the first-order autocorrelation coefficient of the residual (coefficient 0.125, significant at 1 percent level), obtained from regressing performance on individual characteristics ($tenure$ and $tenure^2$) and individual fixed effects, as well as the DW-statistic for panel data, do indeed suggest that disturbances are positively correlated.[1] Serial correlation is also detected when using the Woolridge test for autocorrelation in panel data (Wooldridge, 2002, 282–283) (p-value: 0.05 for H_0: no first-order autocorrelation). We also ran the modified Wald test for group-wise heteroskedasticity on the fixed effect model and found a highly significant test statistic. Therefore, we reject the null hypothesis that the panels in our model have common disturbance variances and that those disturbances are not correlated with the regressors. Hence, adjustments need to be made. If the goal were to estimate a model with complete dynamics, we needed to re-specify the model because

[1] Second- and third-order autocorrelation coefficients are small (0.028 and 0.004) and insignificant.

strong serial correlation is often an indication of omitting important explanatory variables or functional form misspecification. However, as this was not our goal, we had to find a way to carry out statistical inference in light of this positive correlation and potential heteroskedasticity (Wooldridge, 2003, p. 402 and Li and Hsiao, 1998).

Bertrand et al. (2004) discuss serial correlation as a frequent problem, typically caused by the use of a fairly long time series, the positive serial correlation in the dependent variable, and the high degree of persistence of the intervention variable. They used Monte Carlo simulations to investigate how several estimation techniques helped to solve this serial correlation problem. They found that allowing for an unrestricted covariance structure over time within groups, with or without making the assumption that the error terms in all states follow the same process, worked well when the number of groups (i.e., units to which the intervention is applied, here: individuals) was greater than 50. This is satisfied in our sample. In addition, we allow for an arbitrary variance-covariance matrix as we cluster on the team level. These variance estimates are robust in the sense of providing correct coverage rates to much more than panel-level heteroskedasticity. In particular, they are robust to any type of correlation within the observations of each panel/group. Moreover, Bertrand et al. (2004) show that, if the intervention variable is not serially correlated, OLS standard errors are consistent, despite the positive serial correlation in the residuals. This is true in this study where the average correlation of the award variable over time for each individual is -0.05 (correlation coefficients vary between -0.31 and 0.47 with a mode and median of -0.05).

To further check the robustness of the reported standard errors, we applied OLS with panel-corrected standard errors (PCSE) assuming heteroskedastic and contemporaneously correlated disturbances across panels (a method ini-

tially suggested by Beck and Katz, 1995)). The estimates calculated with the Prais-Winsten FGLS (Prais and Winsten, 1954) assuming an AR(1) process in the disturbances, do not differ in any meaningful way from the ones presented above. The same holds, when we apply the Driscoll and Kraay standard errors for fixed effect models (Driscoll and Kraay, 1998). These standard errors are robust to general forms of cross-sectional (spatial) and temporal dependence when the time dimension becomes large. Because this nonparametric technique of estimating standard errors places no restrictions on the limiting behavior of the number of panels, the size of the cross-sectional dimension in finite samples does not constitute a constraint on feasibility — even if the number of panels is much larger than T. Hence, we are confident that the standard errors reported in the table are roughly accurate.

Table B.1: Models with one-way and two-way Clustering

	Model 1a one-way	Model 1b two-way	Model 2a one-way	Model 2b two-way
π_{-6}	-0.041	-0.041	-0.069	-0.069
	(-0.38)	(-0.38)	(-0.67)	(-0.62)
π_{-5}	0.124	0.124	0.117	0.117
	(1.30)	(0.85)	(1.31)	(0.77)
π_{-4}	0.096	0.096	0.098	0.098
	(1.16)	(1.06)	(1.47)	(1.18)
π_{-3}	0.101	0.101	0.080	0.080
	(0.89)	(0.89)	(0.84)	(0.72)
π_{-2}	0.018	0.018	-0.008	-0.008
	(0.16)	(0.16)	(-0.09)	(-0.07)
π_{-1}	-0.041	-0.041	-0.020	-0.020
	(-0.50)	(-0.43)	(-0.29)	(-0.21)
π_{0}	-0.055	-0.055	-0.022	-0.022
	(-0.70)	(-0.54)	(-0.33)	(-0.22)
π_{+1}	0.236^{**}	0.236^{*}	0.246^{**}	0.246^{**}
	(2.67)	(1.94)	(2.96)	(2.00)
π_{+2}	0.027	0.027	0.035	0.035
	(0.21)	(0.19)	(0.29)	(0.25)
π_{+3}	0.192	0.192	0.192	0.192
	(0.93)	(1.25)	(1.19)	(1.31)
π_{+4}	0.049	0.049	0.017	0.017
	(0.41)	(0.48)	(0.17)	(0.16)
π_{+5}	-0.043	-0.043	-0.022	-0.022
	(-0.56)	(-0.51)	(-0.40)	(-0.25)
π_{+6}	0.073	0.073	0.033	0.033
	(0.64)	(0.57)	(0.28)	(0.29)
$Tenure$	0.017^{*}	0.017^{**}	0.009	0.009
	(2.05)	(2.01)	(0.95)	(0.82)
$Tenure^2$	-0.000	-0.000	-0.000	-0.000
	(-1.59)	(-1.35)	(-0.81)	(-0.62)
$Constant$	3.197^{***}	3.197^{***}	3.228^{***}	3.228^{***}
	(35.97)	(21.87)	(34.91)	(21.45)
Observations	1130		667	
R^2	0.581		0.563	

Note: t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Appendix C

Material to Chapter 6

C.1 Table: Comparison of Different Econometric Techniques

Table C.1: Comparison of Different Estimation Techniques

	OLS Random Effects	OLS Fixed Effects	Clustered OLS	Ordered Probit Random Effects
Ln(Value)	0.071^{***}	0.073^{***}	0.069^{**}	0.121^{***}
	(0.021)	(0.020)	(0.029)	(0.028)
Intranet	0.307^{*}	0.311	0.240	0.509^{**}
	(0.185)	(0.195)	(0.285)	(0.252)
Ceremony	0.486^{**}	0.430^{**}	0.572	0.630^{**}
	(0.206)	(0.212)	(0.344)	(0.278)
Gift	-0.404^{***}	-0.384^{**}	-0.451^{**}	-0.534^{***}
	(0.148)	(0.148)	(0.192)	(0.196)
# Recipients	0.008	0.004	0.016	0.004
	(0.010)	(0.010)	(0.010)	(0.013)
Initial Motivation	0.881^{***}		0.886^{***}	1.131^{***}
	(0.056)	.	(0.066)	(0.099)
Constant	0.274	6.806^{***}	0.217	
	(0.475)	(0.200)	(0.719)	
Observations	211	211	211	211
Individuals	54	54	54	54
R^2 within	0.130	0.131		
R^2 between	0.811	0.010		
R^2 overall	0.753	0.016	0.754	

Standard errors in parentheses
Dependent Variable rescaled to interval 0 to 9 for Ordered Probit estimation
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

C.2 Instructions for the Participants

C.2.1 Explanation of the procedure to respondents

We will now present you with **four different scenarios**:

- Introduction of Incentive 1
- Introduction of Incentive 2
- Introduction of Incentive 3
- Introduction of Incentive 4.

In each scenario, a hypothetical incentive for international cooperation is introduced at IBM Rüschlikon. **Every respondent receives a different set of 4 incentives.** The 4 incentives are randomly assigned. Here is an **overview** over the range of possible incentives: The incentives are either **cash incentives or awards**. They are **worth between CHF 50 and CHF 10,000**. Some of the described awards **come with a cash bonus, some with nothing, others with a material gift** such as a pen, a voucher for gourmet dinner, or a 4-day vacation (including additional days of paid vacation).
In the scenarios, the **maximum number of recipients per year** varies between **1 and 20**. In some scenarios, a list of recipients **will be published on the intranet**. In some instances there will be a ceremony for the winners.
For each scenario we will ask you the **same question**:

- What is your willingness to share the finding now?

Please look at these questions as a **thought experiment** and try to answer them by **putting yourself into each scenario**.

C.2.2 How the vignettes were introduced to respondents

Please imagine the following.
(This description is valid for all 4 incentive descriptions. We will repeat it each time so that you can look at it again if you want to.)

In addition to the existing bonuses and awards, IBM Research **announces a new incentive** for individuals who have made great efforts to **promote cooperation between labs**.
Recipients will be selected **annually, starting in December 2007**.
The incentive is for individuals demonstrating **exceptional efforts to promote cooperation** on projects involving employees from **different research labs and IBM units**.
All employees on the IBM payroll are eligible.
Criteria for selection are:

- Initiation and maintenance of successful collaborations among research labs.
- Exceptional dedication to making teamwork succeed across national boundaries.
- The sharing of ideas and knowledge among labs.

C.2.3 How the willingness to share the finding was elicited from the respondents

Situation Description: Please imagine the following:

- You are assigned to an international project that involves several research laboratories.

- Apart from you, there are two employees from Beijing and two from New York on the team.
- You have never worked with the employees from the other labs on a team before. On this team, management does not intervene much in the project.
- You have made an important finding on this team.
- This finding can be used to greatly enhance the international project you are working on at the moment.
- However, the finding is fundamental in the sense that it is very relevant to a variety of other projects as well.

Now you have two options.

- **First, you can share this finding now with your team colleagues** before publishing it under your own name.
  This would solve some important problems on the project and greatly enhance the quality and speed of the project.
- **Second, you can wait and share the finding later, after it has been published.**
  This would eliminate the risk that it could be used by your Chinese or U.S. colleagues in their own work without giving you the appropriate credit for your work, both within the company and when writing papers. You don't think that this is very likely, but the risk exists.

Please indicate how realistic you consider the described situation.
6: very realistic ... 1: very unrealistic; no answer
On a scale between 1 and 10, what is your willingness to share the finding

now?
(Sharing the finding now means choosing the first option.)
10: I would certainly share now. ... 1: I definitely would not share now; no answer.

C.3 Wording of the Levels of the Reward Characteristics

A particular vignette is constructed by randomly selecting one factor level for each of the four factors. In the following, we present the four different factors, their levels, the corresponding texts in the vignettes, and the operationalization of the factors in the statistical analysis.

Factor 1, the type of accompanying reward.
The wording of this factor depended on the monetary value of the reward (factor 3) and will be presented in the description of factor 3 below.

Factor 1, level a, gift.

Factor 1, level b, cash payment.

In the regression models factor 1 was treated as a dummy variable, *Gift*, that took the value 1 if the reward was accompanied by a gift and the value 0 if the reward was accompanied by a payment in cash.

Factor 2, the degree of publicity.
The three factor levels had the following texts.

Factor 2, level a, anonymous.

"The lab director congratulates the winner(s) privately. Award recipients are not published on the intranet."

Factor 2, level b, announcement on the intranet.

"The lab director congratulates the winner(s) privately. Award recipients are published on the intranet."

Factor 2, level c, announcement on the intranet and ceremony.
"The lab director congratulates the winner(s) in the presence of the *other members of the lab at the kick-off meeting in January 2008*. Award recipients are published on the intranet."

In the regression models the factor levels were represented with 2 dummy variables. The variable *Intranet* was a dummy that took on the value 1 if the list of recipients was published on the intranet without a ceremony. The variable *Ceremony* was a dummy that took the value 1 if the recipients were announced on the intranet and the award was handed out in a ceremony. Factor level a was represented by both dummies taking the value 0, factor b was represented as *Intranet* $= 1$ and $Ceremony = 0$, and factor level c was represented as $Intranet = 0$ and $Ceremony = 1$.

Factor 3, monetary value of cash payment or gift associated with the reward.

To determine the monetary value of the reward we used a two-step sampling procedure. We did this to ensure that we sampled the space of monetary values adequately. Specifically, we first randomly determined whether the reward would have no monetary value, a small monetary value, a medium monetary value, or a high monetary value. Second, if the award came with a cash payment (Factor 2, level b), one of three numerical values was selected from the category selected in step one.

Factor 3, level a: Zero monetary value
Factor 3, level b: Small monetary value (CHF 50, 150, or 300)
Factor 3, level c: Medium monetary value (CHF 1,000, 2,000, or 4,000)

Factor 3, level d: High monetary value (CHF 6,000, 8,000, or 10,000)

In the regression models the variable $Value$ was treated as quantitative and took one of the following values: 0, 50, 150, 300, 1,000, 2,000, 4,000, 6,000, 8,000, 10,000.

The wording of factor 3 depended on the type of accompanying reward (factor 1). Because the values of gifts are typically vague, our set of possible gifts had four elements, namely one gift for every category described above. Importantly, the set of possible gifts did not include one gift for each of the possible monetary values listed above. Depending on the category of monetary value drawn, a gift of corresponding value was described to the participants. The associated monetary value used in the statistical analysis was equal to the intermediate amount in the category. For example, if the gift was of medium value, the value used in the statistical analysis was CHF 2,000. In case the reward came with a payment in cash, a random draw decided which of the values in each category was displayed to the participant.

The texts associated with the different levels of factor 3 are displayed below.

Factor 3, level a: Zero monetary value

Factor 1, level a, award with gift:

"In recognition of the recipients' contribution, the award comes with a ballpoint pen labeled 'Thank you for your exceptional contribution!'."

Factor 1, level b, award with cash payment:

"The award is not accompanied by a payment in cash."

Factor 3, level b: Small monetary value (CHF 50, 150, or 300)

Factor 1, level a, award with gift:

"In recognition of the recipients' contribution, the award comes with a gift basket including a good bottle of champagne, two bottles of wine, and various specialty food items."

Factor 1, level b, award with cash payment:

"The award comes with CHF Y in cash.", where Y is randomly chosen from {50, 150, 300}.

Factor 3, level c: Medium monetary value (CHF 1,000, 2,000, or 4,000)

Factor 1, level a, award with gift:

"In recognition of the recipients' contribution, the award comes with an additional day of paid vacation and a voucher for a gourmet menu for four people at the Restaurant Petermann's Kunststuben in Küsnacht, where the star cook Horst Petermann will personally cater the party."

The value of this gift used in the regression was CHF 2,000.

Factor 1, level b, award with cash payment:

"The award comes with CHF Y in cash.", where Y is randomly chosen from {1,000, 2,000, 4,000}.

Factor 3, level d: High monetary value (CHF 6,000, 8,000, or 10,000)

Factor 1, level a, award with gift:

"As a symbol of recognition, the award comes with a voucher for a trip of 4 days for two adults and children to a destination of their choice, all-inclusive. This trip will not be deducted from your normal paid vacation and thus presents additional paid vacation days."

The value of this gift used in the regression was CHF 8,000. The value of the gift is based on the fact that IBM estimates that one workday for one employee is worth about CHF 1,000.

Factor 1, level b, award with cash payment:

"The award comes with CHF Y in cash.", where Y is randomly chosen from {6,000, 8,000, 10,000}.

Factor 4, the maximum number of recipients per year.

"There will be up to X recipients ($Z\%$ of researchers and non-technical staff) per year in the Rüschlikon office.", where X and Z are chosen from the set {(1, 0.4%), (2, 1%), (6, 2%), (10, 4%), (16, 6%), (20, 8%)}.

In the regression models, factor 5 was treated as a quantitative variable, $\#Recipients$, with values 1, 2, 6, 10, 16, and 20.

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Curriculum Vitae

Susanne Neckermann was born on February 23rd, 1979 in Wuerzburg, Germany. She attended the Roentgen Gymnasium in Wuerzburg, Germany and graduated with honors in 1998. From 1999 to 2004 she studied Economics at the University of Cologne and graduated summa cum laude in 2004. In 2001/02 she earned her Masters of Business Administration from the Eastern Illinois University in Charleston, Illinois, USA. For her studies, she received scholarships from the German National Academic Foundation and the Bavarian Foundation for the Promotion of Gifted Students, among others. 2004 to 2009 she attended the doctoral studies at the University of Zurich and worked as a research assistant at the chair of Prof. Dr. Dr. h.c. mult. Bruno S. Frey at the Institute for Empirical Research in Economics at the University of Zurich, Switzerland. Her dissertation was supported by the German National Academics Foundation, the Foundation for the Promotion of Young Academics and the Forschungskredit (scholarship) of the University of Zurich. Since November 2009 she works as a Post-Doc both at the Centre for European Research in Economics and at the chair of Prof. Dr. Dr. h.c. mult. Wolfgang Franz at the University of Mannheim, Germany.